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Price Rings

ARRANGEMENTS between manufacturers to control prices seem often to be regarded in the commercial world as something not quite nice to mention; there is a secrecy, almost a furtiveness, about the whole subject that suggests a certain disposition to regard the business as below the accepted standards of commercial morality. The Committee of Public Accounts, in the course of its inquiry into Post Office contracts, has dragged the fact of the existence of price rings into the light of official publicity. The Accountant-General of the department has informed the committee that there are rings with which the Post Office is bound to deal. The previous keen competition for telephone cord contracts gave place three years ago to negotiation with a single group—with the result that the department had immediately to pay an increased price of 56 per cent. That sounds on the face of it to be a powerful indictment of rings, but the really significant fact is that the Accountant-General himself is satisfied that the prices charged to the Post Office are reasonable. If that means anything, it is surely that before the formation of the ring the Post Office was getting its cables at prices no less than 56 per cent. below the true market value; that, in short, the Government was asking one group of manufacturers to forego profits, or even to supply at a loss—and that cannot be in the public interest.

The morality of price-fixing rings, or of rings of any sort in business, depends upon the way in which they function and upon the objects they are designed to secure. Distrust of rings is probably rooted in the monopolies granted in this country 300 or 400 years ago, and, more recently, in the experience of America. The effect of the monopolies of the Tudor and the Stuart governments was to allow favourites of the monarch to amass wealth, and it is that angle that sticks in the public mind even to-day. The American trusts had the effect of highwaymen holding up the consumer by making him pay exorbitant prices for his needs. There can be nothing but condemnation for monopolistic arrangements of this character. There is, however, another side to the business. It is true that monopolies in England enriched the holder, and that the practice became the cause of much abuse.

The real purpose of monopolies was to establish new manufactures in the country, and in this it was signally successful. Moreton, Chancellor to King Henry VII, wrote that the practice of granting these special rights was wise " so that our people be set to work in arts and handicrafts that our realm may subsist more in itself; that idleness be avoided and the drawing out of our treasures for foreign manufacture stopped." Obviously new industries could not be established unless there was some incentive to establish them, and it was felt that those people who took the trouble to go abroad and to bring back the information upon which businesses could be established were worthy of their reward. This was, in point of fact, the origin of patents. Quite evidently the power to fix prices must reside in the manufacturer.

The position is very similar to-day with the proviso that the prices so fixed must be reasonable. The British iron and steel industry had fallen on parlous times, many works were abandoned or in bad condition, shares had fallen in value to ridiculous figures. When the Government rehabilitated the industry, one of the essential steps was to grant a virtual monopoly with power to fix prices (subject to control) by taxing imported products. Something of the same sort is seen in the Government's plan to assist agriculture.

It is quite clear that modern industrial conditions demand this new technique. We learnt during the depression that unregulated competition caused firms to quote such prices that goods were being supplied at a loss. The ultimate and disastrous result was that many firms became bankrupt and very many others were brought to the verge of bankruptcy. The basic fact is that it is not good to allow any well-managed and well-equipped firm to work at a loss. It can be ascertained at what price an efficient firm with modern plant can manufacture; there is a fair margin of profit that should be added. It is also obvious that at certain periods there is not enough work to go round; it is best for the work to be shared in some equitable manner and with a reasonable profit, rather than for one firm to get the lion's share by quoting ruinous prices. When rings operate in this way there can be no objection.

It usually happens that there is an automatic check upon excessive prices. This check is to be found in importation from abroad or in competition from another industry. The prices of steel are governed by the prices at which it can be imported (just now that particular safeguard is not in full operation); the prices of gas and electricity are governed by the mutual competition between those fuels. In the upshot, if prices become very great indeed, consumers can themselves erect a factory, or give support to a factory that is not in the " ring." Co-operative marketing is a form of price ring; it prevents individual manufacturers from undercutting, though ultimately the prices are governed by those of competing products. In the chemical industry benzole and sulphate of ammonia are instances of this. The price rings themselves are not without their private difficulties. There is endless friction caused by those shortsighted firms who remain obstinately outside the ring and attempt to collect more than their share of business by depressing the prices.

Notes and Comments

New Water-Repellent

AN entirely new agent rendering fabrics water-repellent has just been discovered. It is a novel departure from previously known water-repelling or proofing agents in that it enters into chemical combination with the textile fibres of which the fabric is composed, the resulting cellulose compound having water-repellent properties which are permanent to washing and dry-cleaning solvents. The new water-repellent, which is called Velan PF, and made by Imperial Chemical Industries, Ltd., has the further advantage that the draping qualities and handle of fabrics are also markedly improved on application. I.C.I. gave an exhibition of Velan at Dorland Hall, Regent Street, this week at which demonstrations of Velanising fabrics were given and many interesting examples of Velanised cloth were examined and compared with unvelanised material. It was clear that a very valuable advance had been made in the field of textile finishes. Further details of the exhibition are given on page 291.

The Leather Industry

THERE are a few industries which have been conspicuous by their apparent reluctance to adopt scientific principles in manufacture and prefer to adhere to skilled craftsmanship. Leather goods have been produced for literally thousands of years and the craftsmanship of the trade has developed to an extraordinarily high degree, which probably cannot further be improved upon. But the application of scientific methods to production has taken place only within recent years, and it is this side of the leather industry which will be almost entirely responsible for the future growth of the industry. When the chemicals used in leather manufacture are considered, such as chromium compounds, tannins, dyestuffs, finishes, oils, and fats, it is seen what a wide field there is for the activities of the chemist. The Shoe and Leather Fair, which was held at the Royal Agricultural Hall this week, contained numerous exhibits of leather processing materials, together with their correct conditions of application, which had been developed by the ingenuity of the chemist. An important aspect is the control of leather processes, many of which require close adjustment for satisfactory working. For example, the maintenance of the correct *p*H value in bateing and chrome tanning eliminates danger of spoilage; yet it was somewhat surprising to note that instruments for recording and controlling such variables as *p*H and temperature did not form a noteworthy feature of the Fair.

Medicine Stamp Duty

ABOUT nine months ago, the Select Committee on Medicine Stamp Duties made its report on the working of the Medicine Stamp Acts, putting forward a number of suggestions for modifying the acts. Among these suggestions, it was proposed that their scope should be enlarged so as to include all materials claimed to possess medicinal properties. The proposal raised a storm of protest largely from soap and cosmetic manufacturers as it was realised that the committee's amendment would render cosmetic preparations, claimed to have a beautifying, in fact a medicinal, action on the skin, liable to medicine stamp duty. Many other commodities, such as chocolate advertised, for example, as aiding the digestion, would be dutiable although they cannot be regarded as medicines proper. No new act has been drafted on the committee's report but that there is another side to the question was shown by Mr. G. M. Garcia, chairman and managing director of Aspro, Ltd., at the company's annual meeting held last week. He maintained that in equity the makers of proprietary medicines, who bear their full share of taxation in other directions, should be relieved wholly of the burden of Medicine Stamp Duty. He recognised that the exigencies of the national finances might make this impossible at present, but, as an alternative to complete elimination, he supported the proposal of a lower percentage tax over a wider field, collected, whenever possible, from the manufacturer. It is extremely difficult to draw a sharp line between a substance which has a medicinal action and one which has not, but it is obvious that such a line, equitable to manufacturers, will have to be drawn if the scope of the acts is increased in the future.

Progress in Standardisation

AMONG the principal advantages obtained by introduction of standardisation throughout a trade, are the general use of the same terms, the expression of test results by the same methods, and standard procedure in analysing and testing the properties of products and raw materials. These advantages are obviously most desirable and eliminate much troublesome confusion. The British Standards Institution has done, and is doing, valuable work in this direction for many trades, including the chemical industry, which is, fortunately, comparatively free from such troubles. However, in allied industries, such as the textile and paint trades, difficulties of a very real nature exist. An important step has been taken recently by the Textile Institute in setting up a Unification of Testing Methods Committee, in close collaboration with the British Standards Institution and the Society of Dyers and Colourists, and when it commences work it should provide the means for solving many problems. The major difficulty of this nature in the paint trade lies in the standardisation of colours; for although the colour of the pigments used in manufacture could be standardised with advantage, it would not be easy to standardise the colours of the finished paints nor of those obtained when the paints are applied to different surfaces.

Loss of Trade Marks

IT is often remarked that invented names for use as trade marks sometimes become so familiar to the general public that the manufacturer is liable to lose the monopoly of the name when it has become most valuable to him. This is not always true, for the situation only arises when the trade mark is the one name given to the product, and by which it is solely known, so that the name ceases to be a trade mark and becomes a common designation. Examples of the loss of trade mark monopolies are given by E. W. Leavenworth in the current issue of "Industrial and Engineering Chemistry," and it is pointed out that a true trade mark should never be descriptive of the product, but a name for a particular brand of a product, which product already bears a descriptive name for general use. In order to adopt a trade mark and make it valuable without risk of losing it, it is advised that where a product is entirely new and has no name other than a chemical description which could not be put into general use commercially, a suitable name should be invented for the product. The trade mark should then be decided upon and this should always appear in conjunction with the product name on all labels and advertisements.

Practical Notes on Floor Polishes

Consideration of the Raw Materials Employed

By
GEORGE S. COLLINGRIDGE, B.Sc.

FLOOR polishes fall conveniently into two main categories—namely, those with a wax and solvent base, and those consisting of emulsions with water. The straightforward wax type, though occasionally marketed as liquids, are more familiarly known as the yellow or red tinted pastes sold in flat metal containers. They are still very popular and, for the polishing of plain wooden surfaces, give results that cannot be improved upon. The emulsion types, on the other hand, are effective not only on wooden floors, but also on surfaces composed of rubber, rubber composition, cork, tile and linoleum—in addition to which they require less effort in use.

The emulsion polishes resemble the volatile solvent preparations in that both are dispersions of waxes (notably carnauba modified with other softer waxes)—but the advantages claimed for the emulsions are (a) that they are non-inflammable, and (b) that they are capable, if properly formulated, of producing a good lustre with the minimum amount of rubbing. In fact, certain polishes consisting of waxes, emulsifying agent, water and resin are known collectively as "no-rub" polishes.

Wax and Solvent Polishes

When considering these various preparations it is convenient to commence with the organic solvent types. These are manufactured as both liquids and pastes, the choice from the user's point of view being merely one of individual preference. The main difference is that the pastes contain from 20 to 30 per cent. total wax, while the liquids rarely run higher than 15 per cent. and usually not more than 10 per cent. Sometimes, in addition, various "non-slip" substances of a resinous character are incorporated, as well as aniline dyestuffs, and perfuming or odour-masking compounds designed to cover the somewhat objectionable odour of the solvents.

The waxes most commonly used in floor polish manufacture are as follows: Carnauba wax (various grades), candelilla wax, paraffin wax (various melting points), beeswax (yellow and white), ozokerite, ceresine, and montan wax (bleached). Also, to a lesser extent, stearic acid, Japan wax, Chinese insect wax, bayberry wax, and, of course, the various groups of synthetic waxes.

Characteristics of Carnauba Wax

Carnauba or Brazil wax is an essential constituent of all good floor waxes, but if used alone, especially in a straight solvent base, it would be too hard to polish the surface properly, too grainy, and also considerably too difficult to buff. It has, therefore, to be extended by means of the less expensive paraffin wax, "bound in" with a medium wax such as beeswax or ceresine. As Dr. C. A. Tyler has noted, some manufacturers prefer to use crude carnauba wax, which is a yellowish-green to greenish-brown colour; the finished preparation being suitably coloured brown or orange. For lighter coloured polishes, however, a good quality yellow carnauba should be employed. The use of white carnauba wax is not recommended, for this is bleached after admixture with paraffins and is therefore characterised by slightly different properties, due to the presence of the softer paraffin.

Here the importance of the correct grading of waxes, to ensure good "solubility" in the solvent base, coupled with adequate gloss and ease of application to the floor surface, should be emphasised. Another problem associated with this admixing of waxes is that of raw material costing, which will enable a good polish to be produced at a competitive price. There is, of course, a definite amount of technical ability called for in the incorporation of waxes and solvents into a homogeneous paste, especially when one considers that the waxes are merely held together by the solvent or solvents, rather than dissolved in them. The American authority, Ralph Auch, has aptly described a wax paste polish as a "three dimensional spider web of wax supporting the solvent or liquid portion of the preparation."

Importance of Grading

By the grading of waxes is meant the correct proportional balance of carnauba with an intermediate wax such as beeswax, ozokerite or ceresine and the lower-melting paraffin. This blending is particularly essential to the production of a paste that will hold together well, without bleeding out the solvent, and is also valuable in that it makes possible much greater latitude in the cooling and packing of the product. The effect of a blend of waxes is to render possible the application of controlled cooling, thereby preventing any one wax separating itself from the others during the packing of the container.

Ozokerite is another very important wax, in that its binding properties are second to none. Even a small proportion of ozokerite will work wonders in a paste containing a high proportion of paraffin wax, for it will definitely tend to make the mixture of waxes truly homogeneous and will also tend to prevent crystallising out during the cooling process. The melting point of ozokerite ranges from 55° to 110° C., though the most popular grades usually run from 70° to 84° C. In colour, ozokerite varies from yellow-brown to a very dark greenish-brown, while its gradation from soft and plastic to hard can readily be appreciated from the wide divergence in melting points. It is translucent when pure, and has a characteristic greasy feel to the touch. It is now possible to obtain a fairly high-melting white ozokerite—a grade that is extremely useful in cases where the brown or green coloration is undesirable.

The Purity of Ceresine

Another important wax is ceresine. Theoretically, this is a white, purified ozokerite (m.p. 74° C. to 80° C.), obtained by purifying ozokerite by means of treatment with concentrated sulphuric acid and filtration through animal charcoal. In commerce, however, the term ceresine is frequently used to describe products that consist only partially of purified ozokerite, the balance being paraffin wax. Indeed, so-called ceresines have been offered that contain no ozokerite at all. It is therefore imperative that ceresine should be obtained from a definitely reliable source; the alternative being to purchase the bleached ozokerite and paraffin wax as such, and omitting ceresine entirely from all formulæ.

An important point to remember in this connection is that the melting point of a mixed wax does not bear a simple relationship to the wax content. Thus a mixture of one part of ozokerite to three of paraffin wax has been held to give a better "ceresine" than the average on the market, and at a lower cost. In brief, it may be assumed that the price should be more favourable in the long run if unmixed waxes are purchased, rather than a product which is of uncertain composition. The following table stresses this point by showing the manner in which ozokerite may be used with increasing

quantities of paraffin wax without suffering a proportional lowering of melting point:

Parts Ozokerite. (pure, m.p. 76° C.)	*Parts Paraffin Wax. (m.p. 50° C.)*	*Melting Point of Compounds (°C.)*
10	1	75.0
10	2	74.3
10	3	74.1
10	4	73.8
10	10	71.2

Regarding the other waxes used in floor polishes, it may briefly be said that by far the commonest grade of beeswax employed (m.p. 62-65° C.) is the crude yellow. It is not much used in the volatile solvent polishes, but admirably fulfils the function of an auxiliary emulsifying and stabilising agent in the emulsion types, when used with borax. As an ingredient of wax paste polishes it is claimed to make the wax coating more plastic and is, of course, capable of imparting a smooth, lustrous gloss.

Candelilla and Montan Waxes

Candelilla wax (m.p. 67° C.) is a saponifiable wax like beeswax, and is obtained from the Mexican candelilla plant. The crude wax is dark brown; the refined a dark yellow. Although not so hard as carnauba wax, it is sometimes used as a substitute for carnauba, and serves the purpose of a stiffening agent.

There is scarcely space to discuss montan wax and the synthetic waxes in detail, but it is suggested that polish manufacturers examine the possibilities of the various grades of montan wax now available on the market. Montan wax is obtained from lignite (or "brown coal") mined in Thuringia, and may be had in the crude or bleached state. It is surprising to note that Tyler has condemned the use of montan wax in floor polishes, in the following terms: "This wax always contains dirt and foreign matter, and is not used to any great extent for this reason. The melting point varies with the amount of mineral impurities present." This point of view is now quite out of date, for I have myself examined some excellent, pure bleached montan waxes and have used them in polishes with outstanding success. There is no doubt that bleached montan wax will continue to make progress, as a welcome addition to the longer established waxes available for polish manufacture.

The Solvents Employed

As to the solvents that may be used in these polishes, they are in most cases either petroleum naphtha or turpentine, or, better still, a mixture of both. Turpentine is undoubtedly a better solvent for the waxes and therefore tends to produce a more homogeneous polish. On the other hand, the proper grade of naphtha is a definite aid to quick drying, quite apart from its cheapness as compared with turpentine. The ideal solvent mixture to aim at is one that will dry out quickly enough to facilitate the polishing process; and yet will not evaporate so rapidly as to hamper application over a reasonably wide floor area or enhance the risk of explosion.

Unfortunately the non-inflammable solvents such as carbon tetrachloride are too expensive at the present time for commercial use. For experimental purposes, however, petroleum turpentine substitutes (white spirit), methylated spirit, trichlorethylene, cyclohexanol, methyl cyclohexanol, etc., must also be taken into account.

Other ingredients found in these polishes include shellac, rosin, coumarone resin, and various synthetic resins—all of which have in small amounts been employed as "non-slip" agents, to help prevent the wax surface from being too slippery, without sacrificing the quality of the gloss or lustre. Probably the most satisfactory of these materials is shellac—several grades being experimented with in the polish formula before a final selection is made.

The following formulæ should be found useful guides to manufacturing, especially if the raw materials are chosen with the foregoing considerations in mind:

Floor Polish—Wax and Solvent Paste type.

Carnauba wax	4 lbs.
Montan wax, bleached	2 ,,
Ozokerite	3 ,,
Paraffin wax	16 ,,
Turpentine	32 ,,
Petroleum naphtha	40 ,,

Floor Polish—Wax and Solvent Liquid type.

Carnauba wax	3 lbs.
Ozokerite	1 ,,
Paraffin wax	8 ,,
Turpentine	24 ,,
Petroleum naphtha	64 ,,

In both cases, the waxes are melted and the solvent poured slowly into the melted mass, with constant stirring. Preferably the turpentine should be added first, then the naphtha.

When manufacturing the paste variety, the containers should be left open until cooling has absolutely finished, for otherwise there will be a tendency for the liquid portion to sweat out. Slow cooling prevents the crystallisation of hard, granular particles—an undesirable possibility that is also counteracted by the careful "grading" of waxes, as previously described.

As the liquid type will ultimately separate into two layers, the label on the canister should make a point of recommending the shaking up of the contents prior to use. In order to be on the safe side, a short note should also be included, advising the user to store the container away from extremes of temperature, for the wax definitely tends to separate out if the product is chilled.

The Emulsion Type

The foregoing notes on waxes, etc., all hold good in relation to the emulsion type of polish, with the addition that in this latter class of preparations water and a suitable emulsifying agent are incorporated in place of the organic solvents. Emulsion polishes have the advantage of being slightly cheaper to produce (but not in all cases)—in addition to which they are easier to use, more versatile (*i.e.*, suitable for rubber and other kinds of modern floor materials) and, of course, non-inflammable.

The emulsifying and dispersing agents commonly used are potassium, sodium, ammonium and triethanolamine soaps. The last named are capable of producing the most satisfactory results, although they are initially the most expensive. Quite good results can be obtained with potash soaps, but soda soaps invariably tend to gel on long standing. The triethanolamine soaps also have the strong point in their favour that they need only be incorporated in low proportions. If too much soap is used in a wax polish emulsion, it irreparably damages the lustre of the wax film and also reduces the waterproof properties of the film.

Other possible constituents of emulsion floor polishes are the resinous non-slip materials previously mentioned; also borax and other alkalies. The reason that water-wax polishes require little or no rubbing is that the wax film gels rapidly on drying. Thus to achieve the best results it is necessary to experiment fairly exhaustively, not only with formulæ, but also with the method of manufacture employed.

Before proceeding to a brief examination of the triethanolamine emulsions, it is interesting to note that two successful American preparations are stated to have the following approximate compositions:

	(1)	(2)
Soda soap	4.9 per cent	1.7 per cent.
Carnauba wax	8.8 ,, ,,	8.7 ,, ,,
Shellac	3.6 ,, ,,	1.3 ,, ,,
Borax	0.1 ,, ,,	1.4 ,, ,,
Water	86.0 ,, ,,	86.9 ,, ,,

One of the earlier soap/rosin polishes that the writer has examined was composed approximately as follows: carnauba wax, 10 per cent.; rosin, 2; curd soap, 3; turpentine, 0.5;

water, 84.5. Similar polishes contained not only soap but also potassium carbonate and stearic acid in the formula. Borax was later included to help in the gelling of the polish film, but unless carefully incorporated it was soon found to give rise to gelling in the container. Subsequently shellac was used instead of rosin (unbleached, de-waxed shellac is best); while, later still, the superior merits of triethanolamine over other soaps began to be apparent.

A modern no-rub floor polish emulsion will run from 12 to 17 per cent. solids, and may thus be devised on the following lines:

Floor Polish—No-Rub Emulsion.

Carnauba wax	11.0 lbs.
Ozokerite, high melting	3.0 ,,
Shellac, unbleached	2.0 ,,
Borax	1.0 ,,
Triethanolamine	2.2 ,,
Oleic acid	1.5 ,,
Ammonia (28 per cent.)	0.3 ,,
Water	129.0 ,,
	150 ,,

The oleic acid and the waxes are melted together in a hot-water or steam-jacketed pan. The temperature should be kept fairly level at about 100° C. The triethanolamine is then slowly added, with constant stirring. Then the borax, dissolved in about a pint of the boiling water, is added to the hot wax solution, forming a clear jelly-like mass. After stirring has been continued for about five minutes, the rest of the boiling water—or all but sixteen pounds of it—is added. The shellac and ammonia are introduced into the balance of water and heated until the shellac is in solution—the solution thus obtained being finally added to the main batch with constant stirring. When the mass assumes a translucent, almost fluorescent appearance, heat is turned off and the polish allowed to cool before filling.

The replacing of oleic by stearic acid will give a considerably thicker but less mobile emulsion. If desired, the shellac and ammonia may be omitted. The formula as it stands is capable, however, of giving very satisfactory results, provided that due care is paid to the actual details of manufacture.

Experiments have shown that the rapid cooling of colloidal suspensions in many cases tends to reduce the particle size and so increase the stability and homogeniety of the end product. While this does not hold true for all emulsions, it seems to be so in regard to preparations of this type. Thus C. S. Glickman proposes that, immediately subsequent to processing, a flow of cold water should be introduced into the water-jacketed pan that holds the finished batch. The agitation is continued and the amount of water slowly increased until the solution has become cold. This rapid cooling is thought to increase the gloss and add to the general appearance of the polish but, quite apart from that, it tends to save time and also to prevent the previously common occurrence of a film of wax settling out overnight on the surface of the batch. A suggested method of testing the approximate stability of the emulsion is to spread out a thin film of the polish; if it dries with a bright lustre, it should be stable; if not, it will probably show signs of separation on standing.

Pigments for Paint

Revised British Standard Specifications

THE revision of another eleven of the British Standard Specifications for pigments for paints has just been completed. There are five specifications relating to black (carbon) pigments, viz., carbon, bone, vegetable, lamp and mineral black (No. 284-1937) four specifications for earth colours, viz., sienna, umber, vandyke brown and ochre (No. 312-317); and two specifications for the black and purple oxides of iron (No. 306-1937). This grouping together in one document of similar specifications has been undertaken in the hope that they will be more serviceable to industry in this form.

Each specification has been the subject of most careful scrutiny in the light of the experience gained since its first issue, and modifications have been made to the technical requirements where necessary. The following are the principal alterations:—

Black Pigments for Paints.—No. 284, Carbon Black. Volatile matter content: the maximum limit is now 5.0 per cent. (previously 3.0 per cent.). No. 285. Bone Black. Volatile matter content: the maximum limit is now 2.0 per cent. (previously 0.5 per cent.). Ash content: the limits are now 93 and 70 per cent. (previously 90 and 60 per cent.). Ether extract: the maximum limit is now 0.5 per cent. (previously 1.0 per cent.). No. 286. Vegetable Black. Volatile matter content: the maximum limit is now 2.5 per cent. (previously 1.0 per cent.). Ether extract: the maximum limit is now 2.0 per cent. (previously 1.5 per cent.). No. 287. Lamp Black. Volatile matter content: the maximum limit is now 3.0 per cent. (previously 1.0 per cent.). Ash content: the maximum limit is now 2.0 per cent. (previously 4.0 per cent.). No. 288. Mineral Black. Volatile matter content: the maximum limit is now 3.5 per cent. (previously 2.5 per cent.). Ash content: the maximum limit is now 60 per cent. (previously 50 per cent.).

Black Oxide of Iron for Paints.—No. 306. Black Oxide of Iron. Composition: the composition is now specified on the basis of the iron content (35 per cent. Fe) instead of on the basis of the oxide content (90 per cent. Fe_2O_3). Volatile matter content: the maximum limit is now 2.5 per cent. (previously 1.0 per cent.). Matter soluble in water: the maximum limit is now 2.0 per cent. (previously 1.0 per cent.). No. 339. Purple Oxide. Composition: the minimum iron content expressed as Fe_2O_3 is now 85 per cent. (previously 90 per cent.).

Earth Colours for Paints.—No. 319. Vandyke Brown. Coarse particles: the maximum limit is now 2.0 per cent. (previously 0.5 per cent.). Ash content: the maximum limit is now 15 per cent. (previously 10 per cent.). Volatile matters: the maximum limit is the subject of agreement between purchaser and vendor (previously 1.0 per cent.).

Copies of these new specifications may be obtained from the British Standards Institution, Publications Department, 28 Victoria Street, London, S.W.1, at 3s. 8d. post free for Nos. 284 and 312, and 2s. 2d. post free for No. 306.

Petroleum Research

New Experimental Station in the United States

THE new building of the Petroleum Experiment Station of the United States Bureau of Mines at Bartlesville, Oklahoma, will be dedicated on October 19. The Bureau of Mines, as it relates to the oil and gas industry, is a research organisation whose function is to provide answers to technical and economic questions that are arising continually in the industry. The Petroleum Experiment Station was founded in 1917, and since that time several hundred reports dealing with all branches of the petroleum and natural-gas industries have been published. The new building contains the administrative offices, library, and chemical laboratories. The laboratories are well equipped for distillation of petroleum and for physical and chemical determinations on oils, gases, and oil-field waters. Construction and equipment have been provided in accordance with best modern practice so that accurate work may be done with maximum efficiency. In design and equipment the laboratories compare favourably with the research laboratories of colleges and universities and progressive oil companies.

Manesty Machines and Thompson and Capper (Wholesale), Ltd.

Opening of New Works at Liverpool

THERE was a large gathering present at Speke Hall Road, Liverpool, on September 29, when the new factory for Manesty Machines, Ltd., and Thompson and Capper (Wholesale), Ltd., was declared open by the Lord Mayor of Liverpool (Alderman W. Denton).

The Lord Mayor, who was accompanied by the Lady Mayoress, made a formal inspection of the premises of both firms, which, though housed under the same roof, are quite distinct in their activities.

The new building is a low single storeyed structure, divided into two distinct sections. One of these is occupied by Manesty Machines, Ltd., who manufacture tablet compressing machines and automatic water stills. In separate shops built at the side of the main building, the machines are painted and steel is heat treated. In the heat treatment shop the latest types of gas and electrically heated furnaces and salt baths are used, and the firm do all their own oxy-acetylene welding. The other section is occupied by Thompson and Capper (Wholesale), Ltd., who carry on the business of manufacturing chemists, and concentrate on tableting materials for the trade and for their own proprietary lines. In the tablet compressing department "Manesty" machines are used. The range installed extends from a small hand machine to the large No. 3, and includes rotary machines with outputs of 21,000 tablets per hour. The No. 3 machine is used for compressing synthetic resin moulding powder into preforms, and for tableting lemonade cubes, peasoaker tablets, soup cubes, tea, coffee, and cocoa tablets, cleansing blocks, and catalysts.

A large company, representative of the chemical industry, pharmaceutical and industrial, and of its various organisations, as well as of the Corporation and various commercial interests, attended the opening of the new factory. Among those welcomed by the governing director, Alderman Edwin Thompson, were the Lord Mayor and Lady Mayoress of Liverpool (Alderman and Mrs. W. Denton), Professor W. H. Roberts (city analyst), Mr. E. Gabriel Jones (deputy city analyst), Professors C. O. Bannister, T. P. Hilditch, H. N. Roaf and J. MacLean Thompson, of Liverpool University, the presidents of the Liverpool, Birkenhead and Wallasey branches of the Pharmaceutical Society, and Mr. T. E. Lescher (Evans Sons, Lescher and Webb).

The visitors were greatly interested in all they saw in both sections of the factory, and on the machine-making side were specially attracted to the precision work in the making of punches and dies, for which accuracy up to 0.00025 in. is required, and in the manufacture of automatic stills used for the production of distilled water for medical and other purposes. In the adjoining department they saw some of the machines at work and were much interested in those that were turning out tablets at high speeds.

Speaking at the luncheon at the factory, Alderman Thompson said that this factory was a direct descendant of a business which was started about 140 years ago by his great grandfather. It had passed through four generations of the family and when he entered the business he rather broke away from the business as it was at that time and started on the manufacturing side. A few years ago the business of Thompson and Capper, which comprised a series of retail branches of chemists, was sold and the present firm now had no connection with Thompson and Capper (Chemists), who were owned by Taylor's. There had been a good deal of confusion over this. It was in 1905 that he started taking an interest in the machinery side of the business, and when the retail side of the business was sold the firm became known as Thompson and Capper (Wholesale), Ltd. Some confusion of names arose in consequence, and a company was therefore formed known as Manesty Machines, Ltd., which dealt with the machinery manufacturing side of the company. This side of the business developed rather rapidly and became pressed for space in their town factory, where they had no room for further expansion. They therefore went out to the new factory at Speke, and he would like to recommend that estate to prospective builders of factories because it was a very fine district and one which he thought would develop rapidly.

In reply, the Lord Mayor said that he wished to accord a very warm and hearty civic blessing on this enterprise. He was sure he echoed the sentiments of everyone present that these works would continue to prosper and increase in prosperity as the years went on. The firms of Thompson and Capper (Wholesale), Ltd., and Manesty Machines, Ltd., had shown a spirit of enterprise which he thought was very commendable and praiseworthy.

During lunch, visitors were each presented with a small bronze tablet commemorating the occasion.

The Testing of Fuel Oils

Dielectric Constant Measurements

THE testing of oils and other fuels by dielectric constant measurements has been studied by Arnold (*J. Inst. Fuel*, 1937, *10*, 418). Three specific applications are described—the determinations of the moisture content of coal, the extent of oxidation of an oil, and the composition of the distillate from a binary mixture.

The instrument used for dielectric constant measurement was a "dielcometer," in which there are two coupled circuits, one of constant frequency (controlled by a quartz crystal), whilst the frequency of the other can be varied by its capacity. The liquid to be examined is made the dielectric of a condenser cell in the second circuit, and the heterodyne beat of the system (heard in a telephone) is eliminated by adjustment of the variable condensers in the second circuit.

For moisture determinations in coal, the instrument is first calibrated with dioxane-water mixtures, and then the water in the powdered sample of coal is extracted with the same weight of dioxane as was used in the calibration; the reading of the instrument with the filtered extract then gives the percentage of water in the dioxane, and thence in the coal, directly from the calibration. The liquid must be thermostatted during test, owing to the large change of dielectric constant with temperature.

The extent of oxidation of an oil should be capable of determination with this instrument, since it was found that the dielectric constant of a fuel oil was 1.99 before, and 2.016 after oxidation, a change which corresponds to 17.5 scale divisions. By employing a suitable cell it was possible to make measurements with the dielcometer on the distillate from a benzene-alcohol mixture, during the progress of the distillation; the changes of D.E.C. in this case are large since the constant for benzene is 25.7, and for alcohol 2.28, so that thermostatting is unnecessary. By previous calibration, the composition of the distillate could be read off directly.

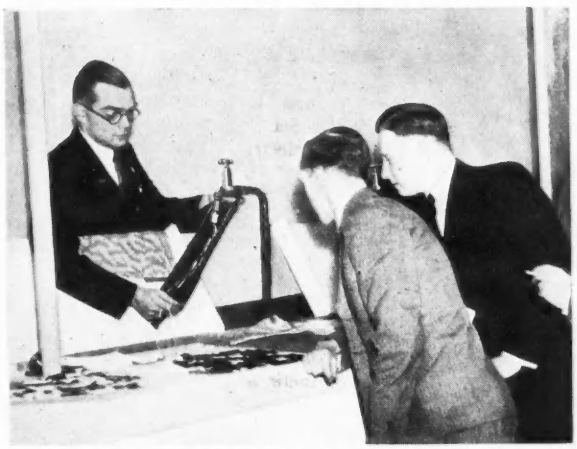
New Water-Repelling and Softening Agent

Demonstrations given at Exhibition of I.C.I. Discovery

UNTIL the present the materials available for rendering fabrics water-repellent have been either substances such as rubber and tar which make the fabric completely waterproof by sealing its interstices, or wax preparations which confer water-repellency, without closing the interstices. The first class of substances have undesirable effects on the draping qualities and handle of the fabric, often destroying the fundamental properties of a cloth entirely, and the substances of the second class, although giving excellent water-repellency without injuring draping qualities and handle to any great extent, are not permanent and are gradually removed by ordinary laundering and completely destroyed by dry cleaning.

Imperial Chemical Industries, Ltd., have now discovered a water-repellent which can be applied to coarse or delicate fabrics without impairing their woven appearance, colour, handle or draping qualities and yet is said to be unaffected by repeated washing and dry cleaning. This new water-repellent is Velan PF, and it was shown for the first time this week, together with numerous examples of its applications, at Dorland Hall, Regent Street, W.1. Velan PF is a cream coloured powder of organic nature, which combines with certain reactive groups, mainly hydroxyl, of the textile fibre, giving new compounds which are highly water-repellent and of great stability. The Velanising process is simple and straightforward as evidenced by demonstrations given at the exhibition. The powder is pasted with warm water and the paste diluted with water, a suitable addition of sodium acetate being made to the bath. The material is then impregnated with the Velan PF solution or suspension, for example, by means of a padding machine, it is squeezed or hydro-extracted, dried and heated. The drying is preferably carried out rapidly and in a current of warm air; the subsequent heating treatment being conducted for a few minutes at 100° to 150° C., when the chemical action between the textile fibre and Velan takes place. Finally, the material is washed in an alkaline detergent bath and dried. As the water-repellent combines chemically with the fibre, it does not rub, crack or wear off like a coating, and the compounds formed are not affected by alkalies and detergents and do not dissolve in the ordinary dry-cleaning solvents.

A wide selection of Velanised fabrics, ranging from sail-cloth to silk stockings, was exhibited, and it was seen that where the cloth was close-woven and smooth-surfaced, water was shed as off a duck's back, in cases of more open textured or hairy cloths any water held in the pile was easily removed by shaking. It was plain that no water was absorbed by the textile fibres themselves, so that they are protected from the rotting effects of alternate wetting and drying and liability to attack by mildew largely reduced. Another important point noticed in the fabrics examined was the softness and attractive handle of the treated cloths. It follows that this softness is as permanent to laundering and dry-cleaning as the water-repellent properties. The process can be applied to both animal and vegetable fibres and it is said that good effects can also be obtained on cellulose acetate, but they are inferior in resistance to those on unmodified cellulose.



A demonstration at the Exhibition of the water-repellent properties of a fabric treated with Velan PF.

International Shoe and Leather Fair

Exhibits of Dyes, Tanning Materials, Oils and Waxes

THE International Shoe and Leather Fair was held at the Royal Agricultural Hall this week, closing yesterday evening. It was a large exhibition comprising about 500 exhibitors, who were for the most part concerned with leather made up into various marketable goods. There were, however, a number of stands on which tanning materials, glues, dyes, finishes and waxes were shown. Prominent among these was Nobel Chemical Finishes, Ltd., who exhibited their Necol range of belting cements, with a sample of belting joined with Necol immersed in water to show the complete resistance of the cement to this medium. Other demonstrations showed the strength and flexibility of the cement jointing for shoe soles, and a range of specimens illustrating the process of stuck-on manufacture. Samples of Necol heel enamels in various colours and patterns completed the exhibit. I.C.I. (Rexine), Ltd., exhibited Rexine leather cloth in many different embossings and shades. Some fifty to sixty different surface grains are available. Rexine has now been applied for shoe and slipper uppers, both patent leather and ordinary types. The general stand of Imperial Chemical Industries, Ltd., was devised to draw attention to the company's technical service.

Hadfields (Merton), Ltd., made a comprehensive display of their fast water pigments and cellulose lacquers, a demonstration in which water dropped continually on a leather finished with a water pigment showing the efficacy of the former. The Yorkshire Dyeware and Chemical Co., Ltd., exhibited samples of their well-known synthetic tans, Paradol, for pure white leather, and Tannadol; and I. G. Dyestuffs, Ltd., dyestuffs suitable for leather and finishes of all types, including samples of synthetic waxes. Pancreol, Ltd., displayed Pancreol, a proteolytic enzyme extracted from pancreas and used for bating, basic chromium sulphate for chrome tanning, sulphonated oils for lubrication, and earth pigments and lakes for finishing. Prominent among the exhibits of Williams (Hounslow), Ltd., who are, by the way, celebrating their sixtieth year of dyestuff manufacture this year, were the recently patented range of Dermatol dyestuffs for leather, colours for shoe creams and boot polishes, and their well-known nigrosine black.

Colour Determination

A New Photo-Electric Colorimeter

A NEW and improved form of the photo-electric colorimeter has been introduced by The General Electric Co., Ltd. The photo-electric colorimeter came into existence through the necessity which arose for a simple instrument suitable for the requirements of industry and science, and conveniently arranged for quick objective measurements independently of the sight qualification of the individual. The chief advantage of the new G.E.C. instrument, besides the fact that it dispenses with the observer's visual judgment, are its high sensitivity and robustness and the wide range of quantities of solution which can be measured, *i.e.*, 1.0 c.c. to 100 c.c. Another important feature is provided by the direct reading scales showing the absorption and extinction values. The rectifier photo-cells employed have a much larger output than that obtained from the well-known alkali cells, and there is therefore a considerable gain in performance.

The G.E.C. photo-electric colorimeter comprises a lamp and two similar glass containers for holding the liquids, together with a pair of matched photo-cells to receive the light through the containers. There are two methods of using the instrument—by comparison or by deflection. In the first method the absorption of one of the liquids is known, and the relative absorption (and so the concentration, etc.) of the other is determined from readings on a calibrated galvanometer. This method is capable of a better accuracy than the deflection method and avoids the necessity for standard curves, but it is not so quick.

The deflection method is employed with highly coloured or dull solutions, which give deflections over ten divisions, as it possesses the advantage of enabling quick work to be

The new G.E.C. Photo-Electric Colorimeter.

carried out and also has low sensitivity to disturbance. Here the least sensitive adjustment of the galvanometer is used, and so fluctuations in the brightness of the lamp are scarcely noticeable. The centring of this lamp is easily carried out as the zero point is very stable. Before measurement both containers are filled with 100 c.c. of water or solution medium and placed in the apparatus, and the instrument is connected to the supply; a period of ten minutes or so is then allowed for the heating of the lamp. After adjusting the zero the right hand container is replaced by another containing the solution to be tested; a reading is then taken. If the deflections are small a slight variation in the method is employed, and the more sensitive range is chosen. Sometimes it is necessary to use complementary colour filters to increase the measuring sensitivity.

Besides comparisons and measurements of the concentration of coloured solutions, a component in coloured solutions can be determined, *i.e.*, the amount of iron in solutions of organic pigments such as wine. In various processes in manufacture the actual absorption values are of less interest than values compared with standard products. For instance, the clarity and colour properties of oil are important, and here the photo-electric colorimeter is admirably suited for continuous control in production.

Bussey Coal Distillation

Liquidation Proposals Defeated

THE board's proposal to place the Bussey Coal Distilation Co., Ltd., into voluntary liquidation and to appoint Mr. E. F. G. Whinney, F.C.A., as liquidator, was defeated at the annual meeting of the company on October 5.

Mr. C. A. Nicholson, who presided, said that a year ago shareholders were informed that the licences which the company owned had been terminated. That meant that all the company had left was certain patents which had subsequently been taken out as a result of the experience obtained when the plant at Glenboig was being worked. As shareholders knew, they had never been able to get the fresh capital necessary to try to prove the process for themselves; nevertheless, the plant at Glenboig was run for a year by the Scottish Gas Utilities Corporation. In the opinion of the board, however, the process had not been proved to the satistaction of the investigating public to be a commercial proposition.

Several shareholders suggested that the company should carry on for a further twelve months in the hope that additional finance could be obtained and the process could be proved.

The chairman said he felt that the position of the company twelve months hence would be just as hopeless as it had been for the last five or six years, and he knew that if the resolution for voluntary liquidation was not passed it was the intention of one creditor at least to press for a compulsory winding-up.

The Bussey Coal Distillation Co.'s profit and loss account shows a debit balance on the year of £87, which raises the total amount at debit of profit and loss to £306,581. Loans from the debts due to associated companies are booked at £34,788.

At a meeting of the Bussey International, Ltd., which followed, the proposal for the voluntary liquidation of the company was also defeated.

The profit and loss account of Bussey International, Ltd., shows a debit balance of £85, which, added to £1,014,968 brought in from the previous accounts, makes a total debit balance of £1,015,053. The balance-sheet shows investments in associated companies at cost at £166,910, and advances to and amounts due by an associated company (Bussey Coal Distillation) at £32,941.

Manchester Chemical Club

First Ivan Levinstein Memorial Lecture

THE Manchester Chemical Club began its first full season on October 5, with a meeting in the Constitutional Club, at which Dr. Max Wyler delivered the first Ivan Levinstein Memorial Lecture. This lecture has been endowed by Dr. Herbert Levinstein, the president of the club, as a tribute to his father's work, and will be given annually.

In the course of his preliminary remarks Dr. Levinstein emphasised that in his father's time there was no patriotic bias in favour of British products.

Dr. Wyler, who called his lecture "Ivan Levinstein—what I know of him," described the difficulties and achievements of his subject's career from the time when he emigrated to England at the age of nineteen. In those days there was no chemical research in this country, and no contact between the universities and manufacturers; most of the experts who built up the British industry had been of German origin. Ivan Levinstein, besides creating a successful private business at the Blackley dyeworks, was "an enthusiastic crusader with many missions." He had devoted his forceful mind and boundless energy to the causes of patent law reform, tariff protection for the chemical industry, and technical education on the Continental model.

An Improved Desiccant

Non-Wetting and Non-Corrosive

A RELATIVELY new desiccant, of United States origin, for refrigerants, air and industrial gases is now being supplied for the first time in the United Kingdom by Binney and Smith and Ashby, Ltd. This material, known as "Drierite" is claimed to be highly efficient and rapid in action, neutral, stable, non-wetting, non-poisonous and non-corrosive. It is inert, except toward water, insoluble in organic liquids and refrigerants, and has a regenerative capacity of several hundred cycles. In the United States it is already regarded as the ideal drier for drying out refrigerating systems or for maintaining a water-free condition in sealed units; it dries all refrigerants, including sulphur dioxide, methyl chloride, and ammonia, and may be installed in either liquid or gas side. It is also excellent for laboratory drying problems in U-tubes, desiccators, balance cases, etc.

The moisture which remains in air in equilibrium with Drierite at ordinary temperatures (25° C.) amounts to 0.005 mg. per litre, and one pound of Drierite will dry approximately 140 cubic feet of air of 50 per cent. relative humidity. It is easy, therefore, to maintain a dry atmosphere in any closed compartment, large or small. In large units the material should be spread 1 to 2 inches deep in large pans or trays and air circulation should be maintained by fans; it may be held in towers or columns and forced circulation may be effected by blowers.

Any of the ordinary and well-known absorption units may be used for the drying of gases with Drierite. The granule size and the size of the unit, however, should be determined by the volume of gas and the velocity of flow required by the particular operation. Such units should be protected from flooding with liquid water, because flooding causes hydration to the dihydrate with resultant hardening of the mass in the absorption unit.

After any normal use any of the forms of Drierite may be regenerated for re-use. The operation is simple and involves only standard equipment. The used and exhausted material should be ventilated to remove vapours, if any, and stored in a convenient container until a sufficient amount is accumulated to justify the work of regeneration. A very convenient heating device for regeneration on the laboratory scale is the ordinary metal laboratory oven which is provided with two or three shelves and heated over a gas burner. The exhausted material should be spread about 1 inch deep in shallow metal pans and heated at 225° to 250° C. for 1 to 2 hours. The regenerated material should be placed in the original container and sealed while hot.

The smallest granule size of Drierite available in quantity, the 8-mesh, offers adequate contact and at the same time a negligible resistance to flow for convenient use in small laboratory units for the drying of air and other gases. The size applicable for general drying operations is 6-mesh.

A New Lead Oxide

A NEW lead oxide corresponding to the formula Pb_7O_{11} has been prepared in Paris by Professor Laffitte and his assistant, C. Hortermann. In a communication to the Academy of Sciences they explain that lead carbonate was heated electrically under a pressure of 200 kg/cm² (2,844 lb. per sq. in.) in oxygen. It was found that at a temperature between 360-365° C. and 460-470° C. a black oxide ($PbO_{1.572}$) was obtained. This corresponds to Pb_7O_{11}. With temperatures above 470° C., red Pb_3O_4 is always obtained. Starting from PbO it was possible to obtain the same reaction, but much more slowly and imperfectly, the residue being a mixture of Pb_7O_{11} and unchanged PbO. Starting with PbO_2 and with a pressure of 200 atmospheres of oxygen, the same black Pb_7O_{11} is obtained between 360-365° C. and 460-470° C. Above this latter temperature, red Pb_3O_4 is obtained. Pb_7O_{11} cannot be peroxidised.

Letter to the Editor

Oil Production Costs

SIR,—As a reader of over fifteen years' standing, I feel entitled to quarrel with your editorial in the October 2 issue.

You state that the discovery of natural crude oil "would have rendered unnecessary the admittedy expensive manufacture of oil from coal." This statement is decidedly much too broad since it conveys that the manufacture of oil from coal is much more expensive than the refined products from natural crude, no matter by what process the oil is manufactured. Such a statement is erroneous since Diesel oil, kerosene, motor spirit and high class aviation spirit can be manufactured below twopence per gallon from a coal with 30 per cent. hydrocarbon volatiles, and the cost of plant is below £10 per ton of oil output per year.

I cannot see wherein the committee appointed by the Australian Government can be questioned as to their findings of costs in the Fischer-Tropsch process and the so-called hydrogenation process, unless the committee was composed of drapers and politicians, for there is no chemical engineer worthy of the name who could not figure the cost of plant, cost of throughput and life of plant, if the process and cost of raw materials are known to him. You in your article are ascribing to the chemical engineer a very low status in the art and are also granting him very little mathematical ability.

The boost for Fischer-Tropsch is commendable since the process is well founded technically and scientifically. Some day it will come into its own when coal, carbonaceous minerals and natural crude oil have been exhausted, and we must fall back upon charcoal from vegetable matter.

At present, however, with the potential oil values in coal, torbanite and cannel, Britain need not be forced to obtain her supplies from foreign sources nor in the roundabout manner of gasifying her coke or charcoal, and synthesising the gases.

There is a process at Britain's disposal, proven, sound in principle, and commercially economical which will manufacture refined oils and spirit direct from coal at a cost below twopence per Imperial gallon.—Yours faithfully,

NAT. H. FREEMAN.

7 Baldwin's Gardens,
Gray's Inn Road, E.C.1.

Water-Soluble Cellulose Ethers

A New Method of Preparation

WATER-SOLUBLE methylcellulose is already familiar in industry where is has a variety of uses as a thickening and emulsifying agent. Water-soluble cellulose ethers form viscous solutions which are useful as thickening agents to replace starch and casein and have the advantage that they are not susceptible to bacterial or fungal deterioration. In common with the solvent-soluble cellulose ethers and esters, they have the valuable property of forming films of good tensile strength and pliability. A new method of preparing cellulose ethers has been found by Bock (*Ind. Eng. Chem.* 1937, *29*, 985-987) which makes it possible to make water-soluble products with a lower degree of alkylation than is achieved by the methods previously described. In brief, this new process consists of treating a solution of cellulose in a quarternary ammonium hydroxide with an alkyl halide or sulphate. The reaction proceeds smoothly at room temperature and is particularly useful in preparing water-soluble derivatives.

There is a striking difference between the degree of alkylation of these cellulose ethers and of the water-soluble cellulose ethers prepared by the use of alkali cellulose. By the new method, ethers containing only 0.6 to 0.7 methyl or ethyl group are soluble in water, whereas the introduction of 1.2 to 1.6 groups is necessary by the alkali cellulose process.

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American Chemical Equipment

Forthcoming Exhibition in New York

THE exhibits of chemicals and chemical products at the 16th Exposition of Chemical Industries, to be held in New York, December 6-11, promise to be more interesting and complete than in many years. In addition, plant equipment and chemical process machinery of the most advanced design will constitute an important feature.

Gas cleaning and dust collecting equipment will be represented by a number of distinctive operating exhibits. In one of these the operating model of a precipitator, glass-enclosed for demonstration, will show spectators the method by which an electrical discharge instantly precipitates a deposit of smoke and clears the atmosphere. This apparatus collects the finest kinds of dust and bacteria, and is said to have effected remarkable savings in the handling of costly materials, especially in the ceramic and chemical fields.

Glass-lined steel equipment will include a complete distillation assembly including still, condenser, and receiver. These units will be connected with glass-lined pipe and fittings. A reaction kettle, capacity 1,000 gallons, will also be shown, representing a significant advance in size for this type of glass-lined apparatus. Glass-lined equipment can be used for treating such sensitive products as glandular extracts and insulin, which must be completely free of any trace of metal. The glass-lined tanks are offered in both vertical and horizontal design. Stainless steel tanks, also offered in horizontal and vertical designs, are made in sizes up to 2,000 gallon capacity. The metal used by one manufacturer is 18.8 stainless steel with low carbon content.

High vacuum pumps, liquid pumps, compressors and blowers for the chemical industry will be a notable feature of the plant equipment section. Some of the high vacuum pumps are constructed of high resistance corrosion-proof materials, and acid centrifugal pumps are made from special alloys. Rotary liquid pumps are self-adjusting to compensate for wear and to insure uniform delivery. Motor-driven rotary pumps and motor-driven vacuum pumps will be shown in actual operation under conditions simulating those encountered in chemical works.

Instruments of precision which safeguard the operation and control of all chemical engineering processes will include indicating and controlling instruments for temperature, pressure, humidity, and the flow of fluids, portable and wall-type indicating pyrometers, resistance thermometers, pyrometer controllers, direct reading air velocity meters, industrial thermometers, oil testing instruments, chemical thermometers and hydrometers.

Plant Hormones

Promoting and Controlling Cell Growth

WITHIN the last few years interest has been aroused by the identification, isolation and synthetic production of the chemical substances which stimulate and control the growth and division of cells and the formation of roots in plants, and which, since they appear to play a part in plant physiology analogous to that of the hormones in the animal constitution, have come to be known as "plant hormones."

The effect of light on the tips of growing shoots was observed by Darwin over fifty years ago, while the presence of growth-promoting substances in plants has been established for some time, but the identification of heteroauxin as β-indolyl-acetic acid and the recognition of the activity of a number of associated compounds, particularly of the naphthalene-acetic acids and of methyl-β-indolyl acetate, have opened a field of practical research and experiment which has considerable potentialities.

The activity of the substances has been shown by the surprisingly quick response of petioles and stems to unilateral treatment with weak lanolin pastes, containing quantities of the order of 0.1 to 2.0 per cent. of the hormone; within a few hours the stems exhibit the difference in cell growth as between their treated and untreated sides by twisting and bending. Their capacity to promote the growth of roots is demonstrated by the vigour and freedom with which roots are formed on cuttings immersed after severance in very dilute aqueous solution for periods of up to 24 or 48 hours, and by the production of adventitious roots on the stems and leaves of plants in growth.

A historical survey of the investigations leading to the recognition of the plant hormones and their effects, with references to the original literature, and an account of the work in regard to them which has been conducted by Dr. M. A. H. Tincker and his colleagues in the Royal Horticultural Society's laboratories at Wisley, will be found in the society's *Journal* for September and December, 1936, respectively.

Seven plant growth-promoting substances are now supplied by The British Drug Houses, Ltd., either as pastes, solutions or the synthetic compounds themselves. The pastes are ready for use, or can be supplied in other concentrations if desired; the solutions are intended to be diluted with water, as solutions of the strengths used in practice are too weak to be marketed conveniently. The plant hormones are β-indolyl-acetic acid, β-indolyl-propionic acid, methyl-β-indolyl-acetate, α-naphthalene-acetic acid, β naphthalene-acetic acid, phenyl-acetic acid, and phenyl-propionic acid.

The Fluoride Content of Phosphate Rock

Recovery as Fluosilicic Acid or its Sodium Salt

THE method employed at the factory of the Consolidated Mining and Smelting Co., at Trail, British Columbia, for the recovery of the fluoride content of the phosphate rock used for the manufacture of superphosphate, is described by Morris, Sutherland, and Wright (*Can. Chem. Met.*, 1937, *21*, 271-274). During the decomposition of the rock with a mixture of hot sulphuric and phosphoric acids (a small quantity of H_3PO_4 is added to control the formation of gypsum), the following reactions involving the calcium fluoride in the fluorapatite occur:—

$$CaF_2 + 2H_3PO_4 \rightarrow Ca(H_2PO_4)_2 + 2HF$$
$$CaF_2 + H_2SO_4 + 2H_2O \rightarrow CaSO_4.2H_2O + 2HF$$
$$SiO_2 + 6HF \rightarrow H_2SiF_6 + 2H_2O.$$

The F/P_2O_5 ratio in the rock is about 0.112, and there is a sufficient excess of silica present to react with all the HF produced. The H_2SiF_6 thus formed is partially evolved as SiF_4 by the heat of the reaction and is vented from the liquor with the air which is blown in to cool it. This air is passed up a tower in which the SiF_4 is removed by scrubbing with jets of water, in which it reacts to form SiO_2 and further H_2SiF_6 as follows:—$3SiF_4 + 2H_2O \rightarrow 2H_2SiF_6 + SiO_2$. The concentration of the fluosilicic acid thus formed is kept down to 20-22 per cent. in order to ensure the precipitation of the silica in a soft gelatinous form, which will not block the spraying jets. The solution of fluosilicic acid is then separated from SiO_2 in a thickening and filtration circuit.

About 30 per cent. of the fluoride content of the rock is recovered in this way, a further 10 per cent. is lost in the gypsum sludge. The rest remains in the crude phosphoric solution resulting from the decomposition of the rock, and is recovered from this, before concentration, by addition of sufficient Na_2SO_4 to convert all the fluosilicic acid to the sodium salt, which is only slightly soluble in the phosphoric acid.

In this way a considerable extent of the fluoride content of the phosphate rock is recovered.

Personal Notes

MR. PERCY JOHN HIGSON, of Harborne, and formerly of Wimbledon, chemical engineer, has left estate valued at £11,791, with net personalty £11,672.

LORD CAWLEY, of Berrington Hall, Leominster, who died at the age of 86, and was for many years chairman of the Heaton Mills Bleaching Co., left estate valued at £864,479, with net personalty £730,469.

MR. LEONARD V. COLE, of Fishguard, West Wales, has been appointed permanent chief civil and constructional engineer to the Indo-Burma Petroleum Co., Ltd., on oilfield work on the Irrawaddy River, Burma.

MR. A. J. GRANT, managing director of Thos. Firth and John Brown, Ltd., stainless steel manufacturers, and president of the Sheffield Chamber of Commerce, has been elected a director of the Park Gate Iron and Steel Co., Ltd.

PROFESSOR S. SUGDEN, formerly of Birkbeck College, has been appointed to succeed Professor F. G. Donnan in the chair of chemistry at University College, London; PROFESSOR C. K. INGOLD becomes director of the chemistry laboratories.

MR. R. F. LYLE, F.I.C., chief chemist of the Westburn Sugar Refineries, Ltd., has been appointed manager of the Berry-yards Refinery, Ltd., Greenock, in succession to Mr. David Boyd, who has retired. Mr. ALEX. MCAUSLEN becomes assistant manager.

MR. J. WOODSIDE, who will succeed Mr. A. Gebbie as manager of the S.C.W.S. sundries department at Shieldhall, Glasgow, has been in the service of the society for 36 years. He has been assistant manager of the sundries department for the past 16 years; previously, he was chief chemist.

MR. G. C. M. JACKSON, joint managing director of the Sheepbridge Coal and Iron Co., Ltd., is representing the Midland amalgamated district at a conference in Poland. He was recently appointed a member of the central council sitting under the Coal Mines Scheme, 1930.

MR. A. P. BEVAN, chairman of Goodlass Wall and Co., Ltd., paint and varnish manufacturers, Liverpool, is preparing for a municipal election campaign. He has been adopted by the Conservative party as their candidate for the Princes Park Ward, Liverpool.

MR. WILLIAM EASTWOOD SOUTHERN, of Salford, chemical manufacturer, has left estate valued £15,994, with net personalty £8,709.

OBITUARY

SIR JOHN MICHAEL HIGGINS, who was metallurgical adviser to the Commonwealth Government during the war, has died at Melbourne, at the age of 74.

MR. DAVID GUTHRIE RANKIN, a director of Alexander, Fergusson and Co., Ltd., lead smelters and paint manufacturers, Glasgow, has died at St. Andrews, aged about 50 years.

PROFESSOR D. H. BERGEY, well known in the United States for his investigations upon food preservation, and formerly professor of bacteriology and hygiene at the University of Pennsylvania, died recently at the age of 76.

PROFESSOR ADOLF L. F. LEHMANN, who was professor of chemistry at the University of Alberta from 1909 to 1930, and was earlier associated with the Department of Agriculture, Mysore, has died at the age of 73.

MR. HORACE WARING, director and chief engineer of Associated Lead Manufacturers Engineering Co., of Bootle, and chief engineer of Goodlass Wall and Lead Industries, Ltd., died at his residence, Great Crosby, near Liverpool, on October 3, at the age of 49. He became associated with Goodlass Wall and Lead Industries, Ltd., and associated concerns, about 20 years ago. Prior to that he was chief engineer at the Crown Steel Works, Sheffield.

MR. GEORGE WILLIAM MULLINS, a member of the Council of the British Non-Ferrous Metals Research Association, the Copper Development Association, the Federation of British Industries, and kindred organisations, was buried at Lodge Hill Cemetery, Birmingham, on October 1. The funeral service at Old Meeting Church, Bristol Street, Birmingham, was attended by representatives of the non-ferrous metals industry, including Messrs. H. W. Clarke (Institute of Metals), A. H. Wolseley (British Non-Ferrous Metals Research Association), W. H. Henman (Nickel Silver Association), A. J. G. Smout and others (I.C.I. Metals). E. W. Skelton (Henry Wiggin and Co.), W. S. Brazener and others (Birmingham Mint), and C. R. Dibben (Federation of British Industries).

Chemical Notes from Foreign Sources

Norway

A HERRING OIL HARDENING FACTORY is to be built at Aalesund.

Russia

COTTON SEED OIL EXTRACTION will be undertaken in a new factory near Timtschansk, capable of dealing with 300 tons.

Manchukuo

PRODUCTION OF CELLULOSE FROM SOYA STRAW will be undertaken by a company recently registered in Dairen with a capital of 10 million yen to be subscribed by the South Manchurian Railway Co., the Sakai Staple Fibre Co., and the Government of Manchukuo, as well as other Japanese manufacturers. An annual output of one million tons cellulose is envisaged.

Japan

FOLLOWING THE STOPPAGE OF CHINA WOOD OIL EXPORTS from China to Japan, a considerably increased amount of perilla seed is being shipped from Manchuria and it is actually reported that the whole of this year's harvest has been bought up by Japan. Prices have hardened in consequence by about 20 per cent.

Lithuania

FOLLOWING INVESTIGATIONS INTO THE EXPLOITATION of Lithuanian gypsum, it is now reported that the best solution consists in heating it in admixture with coal to a temperature of 1,000° C. Using a mixture of one part gypsum and three parts coal, and taking the precaution of eliminating distillation gases by passage over layers of gypsum, a residue of calcium sulphide is obtained. The reaction temperature can be reduced to 900° C. by using chromic oxide as a catalyst.

Italy

NEWLY DISCOVERED NICKEL ORE DEPOSITS are being prospected near Scopello in the Upper Valsesia Valley.

THE UTILITY OF TRISODIUM PHOSPHATE in sugar manufacture and refining is under investigation by the sugar and alcohol industry.

ETHYLENE OXIDE AND ETHYLENE GLYCOL and its derivatives are to be manufactured by the Soc. Italiana Derivati Etilene in a new factory at Pontelagoscuro.

ASBESTOS CEMENT as a constructional material for water and pipe lines has been tried out in Italy with satisfactory results. About 25 miles of gas pipes have been laid down in diameters ranging from 50 to 200 mm.

From Week to Week

A 30,000-TON D.W. WHALING FACTORY, the "Unitas," recently built in German yards for a German subsidiary of the Unilever group, will start on her first expedition to the Antartic on October 5. She will be accompanied by eight catchers.

MANCHESTER AND GLASGOW INTERESTS are behind a proposal to establish a factory on the Clyde, probably at Campbeltown, for refining shark liver oil and utilising the by-products of the vast shoals of basking sharks now in the Firth of Clyde.

THE N.E.I. SUGAR UNION proposes to reduce its capital by 40 per cent. nominal. Shareholders will receive back only 32 per cent. in cash, 8 per cent. being retained as a reserve for depreciation. After reorganisation, the capital will be Fl.16,908,000.

MAMSLEY MINE, near South Zeal, Devonshire, may shortly re-open. This mine, working copper ore, is owned by Mr. Fursdon, lord of the manor of South Zeal. It was last worked about 28 years ago by a company, and future developments are indicated by the recent rise in the value of copper.

THE INSTITUTE OF EXPORT has arranged for weekly lunch-time lectures on "Practice and Finance of Export Trade," to be held at St. Katharine's Hall, 84 Leadenhall Street, London, E.C.3, on Wednesdays from 1.20 to 1.50 p.m. The lectures which commence on October 27 and end on March 23 next, will be given by W. W. Syrett, M.I.Ex.

THE SEPTEMBER ISSUE OF THE PRICED CATALOGUE of B.D.H. laboratory chemicals comprises more than 5,000 products, including 59 products entered for the first time. Specifications for the "Analar" chemicals will be found in "Analar standards for laboratory chemicals," and analytical data relating to other items will be supplied to purchasers on request.

A NEW COMPANY HAS BEEN FORMED with the title Plant Protection, Ltd., to handle the horticultural products of Abol, Ltd., Cooper McDougall and Robertson, Ltd., and Imperial Chemical Industries, Ltd. The resources of the three companies have been pooled to attack more effectively the problems presented by the pests and diseases which afflict horticultural and agricultural crops.

THOMAS BOLTON AND SONS, LTD., smelters and refiners of copper and tin, and brass and bronze manufacturers, Widnes, are increasing their capital by £300,000 to £800,000. At present the whole of the company's capital of £500,000 is in £1 ordinary shares, but a considerable block of 5 per cent. cumulative preference £1 shares will shortly be placed in the market privately at about 21s. per share.

A FIRE BROKE OUT at the works of James B. Nall and Son, manufacturers of lubricating oils, Trafalgar Street, Lower Broughton, Salford, on October 5. The works contained several thousand gallons of oil. The fire began in a quantity of oil in a boiler in the cellar, and the heat caused a number of barrels of oil to explode, but the main supplies, contained in thousand-gallon tanks, were saved from the fire, though almost entirely spoiled by water.

THE LANGLOAN IRON, CEMENT AND CHEMICAL CO., is to make a public issue of the new capital of £300,000 in the form of 3,000,000 shares of 2s. each. There will also be an issue of £150,000 as 5½ per cent. debentures. The company will acquire freehold works covering about 37 acres at Coatbridge, Lanarkshire, with five blastfurnaces, cement-making plant, oil and tar distilling plant, and electric power generating plant, together with various coal, iron ore, and torbanite leases.

AT THE INQUEST ON PERCY ALBERT LAMBERT, aged 24, of Inkerman Street, Stockton, an employee of Athole G. Allen, Ltd., Stockton Chemical Works, held on September 30, it was revealed that death was due to T.N.T. poisoning. It was stated that Lambert was boxing T.N.T. pellets and was not wearing gloves when he complained of feeling ill. He began work on July 24, and was examined on the previous day by a surgeon. He was next examined on August 11 and certified fit, but on September 7, was suffering from toxic jaundice associated with T.N.T. poisoning, and his condition on September 10 necessitated removal to hospital where he died ten days later. A verdict of "accidental death" was returned.

A GENERAL DISCUSSION ON LUBRICATION AND LUBRICANTS will be held by The Institution of Mechanical Engineers, October 13 to 15. Owing to the large numbers of applications for membership, the discussion will be held in the Central Hall, Westminster, London, S.W.1. About 140 papers are to be presented by the group reporters, who include Professor H. W. Swift, Mr. H. Ricardo, Mr. W. A. Stanier, Lt.-Col. S. J. M. Auld, Mr. E. A. Evans and Dr. H. J. Gough. In conjunction with the discussion an exhibition will be held at the Science Museum, South Kensington, S.W.7. The exhibits will include lubricants, bearings, applications of lubrication, filtration, testing and research, as well as an interesting series of exhibits from the Science Museum collections. This exhibition will remain open until October 31.

ELECTRO METALLURGICAL CO., a unit of Union Carbide and Carbon Corporation, has contracted to purchase from the Tennessee Valley Authority a large block of industrial power which it proposes to use at a new plant to be located in the Wilson Dam area, Alabama. The proposed plant will be constructed principally for the manufacture of ferro-alloys, calcium carbide, and other electric-furnace products.

THE LORD PRESIDENT OF THE COUNCIL has appointed Mr. G. M. B. Dobson, D.Sc., F.R.S., Lieut.-Colonel J. H. M. Greenlyy and Mr. S. K. Thornley to be members of the advisory council to the committee of the Privy Council for Scientific and Industrial Research. Professor A. Fowler, D.Sc., F.R.S., Sir Clement D. M. Hindley, and Mr. T. Franklin Sibly, D.Sc., have retired from the council upon the completion of their terms of office.

THE SEASON'S CAMPAIGN AT THE FENLAND BEET SUGAR FACTORIES, which are under the control of the British Sugar Corporation, began last week. The capacity of the Spalding factory has been increased by 20 per cent., at a cost of £35,000. Ten thousand process workers in the sugar beet industry will benefit by an agreement which has been reached between the British Sugar Corporation and a joint trade union committee which establishes the principle of the 48-hour week, and gives an advance of wages varying from ¼d. to 1½d. an hour.

Forthcoming Events

Manchester.

October 11.—Institute of the Plastics Industry (Northern Section), at the Engineers' Club, 17 Albert Square, at 7.15 p.m., G. H. Glassey, "A Salesman's Outlook on the Future Developments in the Plastics Industry."

London.

October 12.—Institute of the Plastics Industry; at British Industries House, Marble Arch, W.1, at 7.30 p.m. T. S. Smith, "The Application of the Bedoux Methods to the Plastics Trade."

October 13-15.—Institution of Mechanical Engineers at Central Hall, Westminster, S.W.1. Discussion, "Lubrication and Lubricants."

October 14.—Institute of Fuel at the Biological Society, Burlington House, Piccadilly, W.1, at 2.30 p.m. Sir Philip Dawson, M.P., presidential address, "Coal; The Next Step"; at 3.30 p.m., Dr. Morris W. Travers, Melchett lecture, "The Study of Gases"; at 6.45 for 7.15 p.m., annual dinner and dance at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2.

Association of British Chemical Manufactures. Annual dinner at Grosvenor House, Park Lane, W.1., at 7 for 7.30 p.m.

October 15.—Institute of Chemistry at 30 Russell Square, W.C.1, at 8 p.m. Sir Martin Forster, D.Sc., F.R.S., 20th Streatfield memorial lecture, "Chemical Changes and Chances."

October 16.—Royal College of Science Association, Annual dinner at the Rembrandt Rooms, Thurloe Place, S. Kensington, S.W.7, at 7 for 7.30 p.m.

October 20.—Electrodepositors' Technical Society at the Northampton Polytechnic Institute, St. John Street, Clerkenwell, E.C.1, at 8.15 p.m. Dr. T. P. Hoare, "The Application of Some Corrosion Principles to Problems in Electrodeposition."

Newcastle.

October 13.—Institute of Chemistry (Newcastle-upon-Tyne and N.E. Coast Section), at the University Union, Newcastle, annual meeting and chairman's address.

Liverpool.

October 14.—Institute of Chemistry (Liverpool and N.W. Section), at the Constitutional Club, Water Street, at 7.30 p.m. A. W. M. Wintle, "Chemical Service Implication."

Leeds.

October 15.—Institute of Chemistry (Leeds Area Section), joint meeting with the Microchemical Club and the Leeds University Chemical Society. Professor H. V. A. Briscoe, "Microchemical Methods." Discussion, "Applications of Microchemistry," opened by Professor F. G. Tryhorn.

Birmingham.

October 18.—Institute of the Plastics Industry (Midlands Section), at the James Watt Memorial Institute, Great Charles Street, at 8 p.m. K. M. Chance, "The Function of Art in Industry."

Hull.

October 19.—Hull Chemical and Engineering Society at Municipal Technical College, Park Street, at 7.45 p.m. J. A. Doorat, "Progress in Electric Arc Welding."

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

PURIFICATION OF OIL, ETC.—Aktiebolaget Separator. (United States, Sept. 25, '36.) 25704.

PREPARATION OF AMINO HYDROXY DERIVATIVES OF DIARYLMETHANES.—W. Blythe and Co., Ltd., W. H. Bentley, and B. Catlow. 25657.

DECARBONISATION OF COMMERCIAL NICKEL OR COBALT.—R. Bosch, A.-G. (Germany, Sept. 22, '36.) 25658.

MANUFACTURE, ETC., OF CELLULOSE DERIVATIVES.—British Celanese, Ltd. (United States, Sept. 30, '36.) 25724, 25725, 25726, 25727.

MANUFACTURE OF TITANIUM PIGMENTS.—British Titan Products Co., Ltd., and A. G. Oppegaarel. 25374.

TREATMENT OF A SUBSTANCE TO PRODUCE VITAMIN D THEREIN.—A. F. Burgess (Nutrition Research Laboratories, Inc.). 25594.

STABILISATION OF VINYL RESINS against the action of light.—Carbide and Carbon Chemicals Co. (United States, Oct. 16, '36.) 25136.

MORPHOLINE EMULSIFYING AGENTS.—Carbide and Carbon Chemicals Co. (United States, Oct. 22, '36.) 25137.

IMPROVEMENT OF TEXTILE MATERIALS.—Chemische Fabrik T. Rotta. (Germany, Sept. 19, '36.) 25184-9.)

DYEING OF CELLULOSE TEXTILE MATERIALS.—Courtaulds, Ltd., and H. J. Hegan, and E. E. Tallis. 25475.

MANUFACTURE OF ORGANIC SUBSTANCES.—H. Dreyfus. 25381.

COMPOSITIONS FOR FINISHING WOOD SURFACES.—E. I. du Pont de Nemours and Co. 25212.

MANUFACTURE OF BORON FLUORIDE.—E. I. du Pont de Nemours and Co. (United States, Oct. 10, '36.) 25636.

MANUFACTURE OF UNSATURATED ALCOHOLS.—E. I. du Pont de Nemours and Co., and A. D. Macallum. 25753.

PREPARATION OF VITAMIN CONCENTRATES.—Eastman Kodak Co. (United States, Sept. 21, '36.) 25250.

PREPARATION OF SYNTHETIC RESINOUS PRODUCTS, ETC.—J. P. Fraser. 25540.

PROCESS FOR RENDERING MATERIALS MOTH-PROOF.—J. R. Geigy, A.-G. (Germany, Sept. 26, '36.) 25297.

PREVENTION OF FIRE IN TANKS, ETC., FOR SPIRITS, ETC.—J. Graymore, and D. E. Ryan. 25351.

MANUFACTURE OF PRODUCTS from nitro-cellulose and polyvinyl acetals.—W. W. Groves (Deutsche Celluloid-Fabrik). 25477.

ELECTRICAL INSULATION.—W. W. Groves (I. G. Farbenindustrie.) 25180.

PROCESS FOR RENDERING ARTIFICIAL SILK resistant to creasing. W. W. Groves. 25580.

MANUFACTURE OF MILK-SOLUBLE ALGINATE COMPOUNDS.—R. Haddan (Kelco Co.). 22300.

PRODUCTION OF ARTIFICIAL FOG.—N. K. Hallström. (Sweden, Sept. 17, '36.) 25260.

PRODUCTION OF ARTIFICIAL FOG.—N. K. Hallström. (Sweden, Dec. 15, '36.) 25261.

PRODUCTION OF ARTIFICIAL FOG.—N. K. Hallström. (Sweden, Aug. 20.) 25262.

THERMAL PRODUCTION OF METALLIC BARIUM.—I. G. Farbenindustrie. (Germany, Jan. 9.) 25486.

MANUFACTURE OF A CYCLIC HYDROCARBON.—I. G. Farbenindustrie. (Germany, Sept. 24, '36.) 25581.

MANUFACTURE OF A DITERPENE.—I. G. Farbenindustrie. (Germany, Sept. 24, '36.) 25582.

PRODUCTION OF FAST DYEINGS, ETC., on artificial structures.—I. G. Farbenindustrie. (Germany, Sept. 30, '36.) 25712.

LAMINATED FABRICS.—Imperial Chemical Industries, Ltd. 25210.

MANUFACTURE OF AZO-DYESTUFFS.—Imperial Chemical Industries, Ltd., and H. H. Cliffe. 25211.

MANUFACTURE OF BALLOON-CLOTH.—Imperial Chemical Industries, Ltd. 25367.

SIMULTANEOUS RECOVERY OF FATTY ACIDS and industrially valuable salts.—G. W. Johnson (I. G. Farbenindustrie.) 25183.

MANUFACTURE OF INTERPOLYMERISATION PRODUCTS.—G. W. Johnson (I. G. Farbenindustrie.) 25282.

SEPARATION OF UNSAPONIFIABLE CONSTITUENTS from mixtures containing the same.—G. W. Johnson (I. G. Farbenindustrie.) 25283.

MANUFACTURE OF POLYMERISATION PRODUCTS.—G. W. Johnson (I. G. Farbenindustrie.) 25472, 25473.

REACTING CARBON MONOXIDE WITH HYDROGEN.—G. W. Johnson (I. G. Farbenindustrie.) 25474, 25589.

MANUFACTURE OF HALOGEN OLEFINES.—G. W. Johnson (I. G. Farbenindustrie.) 25588.

HALOGENATION OF HYDROCARBONS.—G. W. Johnson (I. G. Farbenindustrie.) 25590, 25719.

MANUFACTURE OF DYESTUFFS containing chromium.—G. W. Johnson (I. G. Farbenindustrie.) 25591, 25592, 25593.

MANUFACTURE OF UNSATURATED COMPOUNDS.—G. W. Johnson (I. G. Farbenindustrie.) 25720.

CONDENSATION OF VAPOURS.—F. Krupp, A.-G. (Germany, Sept. 25, '36.) 25270.

PRODUCTION OF WOOD-PULP.—Kubler and Niethammer, and K. Schwabe. 25478.

POLYVINYL-ACETAL RESIN PLASTICS.—Libbey-Owens-Ford Glass Co. (United States, May 14.) 25603.

PACKING MATERIAL.—L.I.C.I. Labatorio Italiano Chimico Industriale. (Italy, Sept. 21, '36.) 25471.

HYDROGENATION, ETC., OF OILS.—E. A. Ocon. 25519.

TREATMENT OF HEAVY HYDROCARBON OILS.—E. A. Ocon. 25520.

PAINTS.—P. C. Oswald. 25550.

RESINS CONTAINING RUBBER.—Rubber Producers Research Association, C. A. Redfern and P. Schidrowitz. 25689.

TREATMENT OF RUBBER.—Rubber Producers Research Association. 25690.

REGENERATION OF CATALYSTS for benzine synthesis.—Ruhrchemie, A.-G. (Germany, Sept. 22, '36.) 25650.

REGENERATION OF CATALYSTS for benzine synthesis.—Ruhrchemie, A.-G. (Germany, Oct. 6, '36.) 25651.

ADHESIVE FOR LINOLEUM, ETC.—C. Schülein. 25213.

MANUFACTURE OF ACID SODIUM FLUORIDE.—Seri Holding Soc. Anon. (Italy, Oct. 15, '36.) 25208.

MANUFACTURE OF BERYLLIUM FLUORIDE.—Seri Holding Soc. Anon. (Italy, Oct. 26, '36.) 25209.

DEVICES FOR DESTROYING FROTH.—Soc. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procedes G. Claude. (Switzerland, Aug. 11.) 25604.

MANUFACTURE OF ESTERS.—Soc. of Chemical Industry in Basle. (Switzerland, Sept. 30, '36.) 25583.

MANUFACTURE OF ESTERS.—Soc. of Chemical Industry in Basle. (Switzerland, Sept. 1.) 25584.

RECOVERY OF CONDENSING AGENTS.—Standard Oil Development Co. (United States, Nov. 21, '36.) 25417.

DETERGENTS, ETC.—Standard Oil Development Co. (United States, Nov. 7, '36.) 25642.

Specifications Open to Public Inspection

PROCESS FOR THE PREPARATION OF DYESTUFFS, specially suitable for dyeing and printing cellulose esters and dyestuffs so prepared. Compagnie Nationale de Matieres Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann. March 27, 1936. 5109/37.

COLD STORES FOR LIQUEFACTION AND RECTIFICATION OF GASES.—Ges für Linde's Eismaschinen A.-G. March 26, 1936. 5598/37.

MANUFACTURE OF CELLULOSE DERIVATIVES which are soluble in sold water.—Henkel and Cie, Ges. March 27, 1936. 5700/37.

PROCESS AND APPARATUS FOR PRODUCING ACETYLENE and lime hydrate.—Prest-o-Lite Co., Inc. March 27, 1936. 5926/37.

MANUFACTURE OF SATURATED AND UNSATURATED KETONES of the pregnan series.—Soc. of Chemical Industry in Basle. March 23, 1936. 7044/37.

MANUFACTURE OF AN OIL-SOLUBLE RESINOUS MATERIAL and lubricating oils.—Texaco Development Corporation. March 31, 1936. 7065/37.

PROCESS FOR OBTAINING LIQUID PRODUCTS from carbonaceous substances.—Thermogenese. March 25, 1936. 7350/37.

PROCESS FOR PRODUCING LUBRICATING OIL or additions to lubricating oil.—Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. March 25, 1936. 7887/37.

PROCESS FOR THE CONCENTRATION OF AQUEOUS DISPERSIONS OF RUBBER and similar rubber-like substances.—Metallges, A.-G. March 21, 1936. 8059/37.

CLARIFICATION OF INDUSTRIAL LIQUORS.—British Titan Products Co., Ltd. March 21, 1936. 8271/37.

PROCESS FOR THE MANUFACTURE OF DERIVATIVES of 2.6-dihydroxypyridine-4-carboxylic acid.—Schering-Kahlbaum, A.-G. March 23, 1936. 8356/37.

PROCESS FOR THE MANUFACTURE OF DYESTUFFS for cellulose esters and products resulting therefrom.—Compagnie Nationale de Matieres Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann. March 24, 1936. 8357/37.

MANUFACTURE OF WATER-SOLUBLE CONDENSATION PRODUCTS containing phosphorous.—J. R. Geigy, A.-G. March 21, 1936. 8364/37.

PROCESS FOR MANUFACTURING PRODUCTS of high molecular weight soluble in mineral oils.—Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. March 24, 1936. 8431/37.

FLUORESCENT SUBSTANCE.—Degea, A.-G. (Auerges). March 21, 1936. 8433-4/37.

MANUFACTURE AND PRODUCTION OF FORMIC ACID.—I. G. Farbenindustrie, A.-G. March 25, 1936. 8532/37.

NON-ALKALINE AND NON-SAPONACEOUS DETERGENTS for the body. I. Reichstein. March 27, 1936. 8712/37.

PRODUCTION OF RESINOUS COMPOSITIONS.—Naamlooze Venootschap Industrieele Maatschappij Voorheen Noury and Van Der Lande. March 27, 1936. 8734/37.

PROCESS FOR THE MANUFACTURE OF ALCOHOLS and derivatives thereof.—Schering-Kahlbaum, A.-G. March 26, 1936. 8842/37.

PROCESS FOR DEGASEFYING and calming liquid steels.—R. P. Lemoine. March 27, 1936. 8843/37.

TREATMENT OF LIQUID SLAGS and similar materials.—C. H. Schol. March 27, 1936. 8879/37.

MANUFACTURE OF ANTHRAQUINONE DERIVATIVES.—Imperial Chemical Industries, Ltd. March 25, 1936. 8918-9/37.

PROCESS AND APPARATUS FOR THE TREATMENT OF OILS and the like. Sommer-Schmidding-Werke Vertriebges, and H. V. A. Briscoe. March 20, 1936. 14727/36.

REFINING OF EDIBLE FATS AND OILS.—Industrial Patents Corporation. March 16, 1936. 21467/36.

METHOD OF AND APPARATUS FOR THE FILTERING OF LUBRICATING OILS.—De Luxe Products Corporation. March 16, 1936. 26960/36.

MANUFACTURE OF RUBBER CHLORIDE COMPOSITIONS.—Raolin Corporation. March 17, 1936. 5314/37.

MANUFACTURE OF RUBBER CHLORIDE and like rubber materials.—Raolin Corporation. March 17, 1936. 5315-6/37.

PROCESS FOR MAKING IMPROVED LACQUERS AND PASTES from mixed polymerisates of vinyl chloride.—Deutsche Celluloid-Fabrik. March 19, 1936. 5414/37.

PROCESS FOR RENDERING MATERIALS MOTH-PROOF.—J. R. Geigy, A.-G. March 14, 1936. 5696/37.

PRODUCTION OF CITRIC ACID.—Chauncey Chemical Corporation. March 20, 1936. 6633/37.

DEVICE FOR PROTECTION AGAINST POISON GASES.—L. Granger. March 16, 1936. 7168/37.

PROCESS FOR THE PRODUCTION OF HIGHER UNSATURATED ALIPHATIC ALCOHOLS.—Bohme Fettchemie-Ges. March 16, 1936. 7360/37.

APPARATUS FOR DRYING OR COOLING PASTES and slurries.—I. G. Farbenindustrie. March 14, 1936. 7533/37.

PROCESS FOR DEPHOSPHORISING and desulphurising steel.—Soc. D'Electrochimie, D'Electrometallurgie, et des Acieres Electriques D'Ugine. March 16, 1936. 7534/37.

PROCESS OF PRODUCING BUTYL ALCOHOL and acetone.—A. Frey, H. Gluck, and Chemische Fabrik Kalk Ges. March 16, 1936. 7720/37.

CONTINUOUS APPARATUS FOR THE MANUFACTURE OF SUPERPHOSPHATES and similar products.—R. Moritz. March 17, 1936. 7902/37.

PROCESSING INDUSTRIAL GASES, vapours, fumes, and the material from which these substances are produced.—Thermo-Electric Oil Extraction, Ltd. March 20, 1936. 7904/37.

TEXTILE ASSISTANTS.—Soc. of Chemical Industry in Basle. March 18, 1936. 7977/37.

PROCESS AND APPARATUS FOR THE CALCINATION OF COMBUSTIBLE LIQUORS of any kind, with a view to the recovery of the ash.—Raffinerie Tirlemontoise Soc. Anon. March 18, 1936. 7979/37.

RESINOUS CONDENSATION PRODUCTS OF THE RESOLE TYPE, soluble in weak alkalies, and their manufacture.—J. R. Geigy, A.-G. March 19, 1936. 8025/37.

METHOD OF FORMING RUBBER SUBSTITUTES by polymerisation of halogen-2-butadienes-1, 3.—E. I. du Pont de Nemours and Co. March 19, 1936. 8109/37.

METHOD OF POLYMERISING A HALOGEN-2-BUTADIENE-1, 3.—E. I. du Pont de Nemours and Co. March 19, 1936. 8110/37.

METHOD OF STABILISING PLASTIC POLYMERS of halogen-2-butadienes-1, 3.—E. I. du Pont de Nemours and Co. March 19, 1936. 8111/37.

SYNTHETIC RESINS, their manufacture, and applications.—E. I. du Pont de Nemours and Co. March 19, 1936. 8184/37.

OBTENTION OF WATER-SOLUBLE AND TECHNICALLY VALUABLE ORGANIC DERIVATIVES OF POLYMERIC METAPHOSPHORIC ACIDS.—J. A. Chemische Fabrik Benckiser Ges. March 19, 1936. 8197/37.

PACKING FOR THE JOINTS OF ACID-CONTAINING TANKS and chambers.—F. Ineichen. March 19, 1936. 8214/37.

RUBBER ACCELERATOR COMPOSITIONS.—Belvedere Chemical Co., Ltd. March 20, 1936. 8232/37.

Specifications Accepted with Date of Application

MOTOR FUELS.—Anglo-Iranian Oil Co., Ltd., A. E. Dunstan, and S. F. Birch. Dec. 18, 1935. 472,463.

MANUFACTURE OF DURABLE FERROUS COMPOUNDS.—A. G. Bloxam (Soc. of Chemical Industry in Basle). Feb. 18, 1936. 472,531.

MANUFACTURE AND PRODUCTION OF AROMATIC HYDROCARBON COMPOUNDS of low boiling point.—G. W. Johnson (I. G. Farbenindustrie.) Feb. 18, 1936. 472,538.

DISTILLATION AND CRACKING OF TARS, oils, and like liquid hydrocarbons and of fats.—T. O. Wilton. Feb. 24, 1936. 472,541.

HALOGEN DERIVATIVES OF ACETO-PROPANOL.—Research Corporation. March 18, 1935. 472,396.

PROCESS FOR PURIFYING IRON, steel, non-ferrous metals, and ferro-alloys.—Electro Metallurgical Co. April 3, 1935. 472,397.

MANUFACTURE OF SUBSTITUTED 3-AMINOPYRENES.—W. W. Groves (I. G. Farbenindustrie.) March 17, 1936. 472,398.

STARCH PREPARATION.—L. Mellersh-Jackson (Ultrazell Ges.). March 17, 1936. 472,473.

MANUFACTURE OF TRANSPARENT CELLULOSIC SHEETS and films.—British Cellophane, Ltd. March 19, 1935. 472,264.

MANUFACTURE OF TRANSPARENT CELLULOSIC SHEETS and films.—British Cellophane, Ltd. March 19, 1935. 472,265.

CARBONISATION AND DISTILLATION OF CARBONACEOUS MATERIALS. J. A. Chown. March 20, 1936. 472,596.

MANUFACTURE OF RUBBER ARTICLES.—B. J. Habgood, L. B. Morgan, and Imperial Chemical Industries, Ltd. March 18, 1936. 472,319.

DISTILLATION OR HEAT TREATMENT OF SOLID CARBONACEOUS MATERIALS and apparatus therefor.—British Coal Distillation, Ltd., R. D. Hardy, C. Machen, and E. H. G. Aram. March 20, 1936. 472,276.

ION-EXCHANGE and acid-removing materials.—United Water Softeners, Ltd., and E. L. Holmes. March 20, 1936. 472,404.

MANUFACTURE OF A DIHYDROXYSTILBENE-DICARBOXYLIC ACID.—I. G. Farbenindustrie. March 23, 1935. 472,489.

PREPARATION, PURIFICATION, OR SEPARATION OF OXO-COMPOUNDS. H. Frisch. March 23, 1936. 472,545.

MANUFACTURE OF SYNTHETIC RESINS.—E. I. du Pont de Nemours and Co. March 22, 1935. 472,492.

CONCENTRATION OF AQUEOUS SOLUTIONS of nitric acid.—E. I. du Pont de Nemours and Co. March 23, 1935. 472,493.

PYROLYTIC CONVERSION OF HYDROCARBON OILS.—Gyro Process Co. March 22, 1935. 472,601.

MANUFACTURE FROM VISCOSE of a substitute for wool.—W. W. Groves (I. G. Farbenindustrie.) March 24, 1936. 472,603.

MANUFACTURE OF VAT DYESTUFFS.—A. Carpmael (I. G. Farbenindustrie.) March 24, 1936. 472,325.

PRODUCTION OF COLOURED TITANIUM PIGMENTS.—W. J. Tennant. March 24, 1936. 472,605.

MANUFACTURE AND PRODUCTION OF TRIARYLMETHANE DYESTUFFS. G. W. Johnson (I. G. Farbenindustrie.) March 25, 1936. 472,407.

CONVERSION OF OLEFINES into valuable products of high molecular weight.—G. W. Johnson (I. G. Farbenindustrie.) March 27, 1936. 472,553.

CLEANING AND DEGREASING OF MATERIALS.—Imperial Chemical Industries, Ltd. May 22, 1935. 472,342.

PROCESS FOR DRYING SUBSTANCES in the condition of sludge, and for evaporating solutions.—Metallges, A.-G. Aug. 21, 1935. 472,437.

PRODUCTION OF A SOUR-MILK POWDER adapted for use in making baking-powders or in making self-raising flour.—H. G. C. Fairweather (Aktieselskabet Den Danske Maelkekoadenserings-fabrik). July 20, 1936. (Convention date not granted). 472,564.

PROCESS FOR THE MANUFACTURE OF REDUCTION PRODUCTS of the cyclopentano-polyhydrophenanthrene series.—Schering-Kahlbaum, A.-G. March 24, 1936. 472,612.

PRODUCTION OF VALUABLE, IN PARTICULAR HIGH-BOILING HYDROCARBONS, from solid carbonaceous materials by destructive hydrogenation.—International Hydrogenation Patents Co., Ltd. Jan. 15, 1936. 472,354.

PRODUCTION OF ANDROSTENDIOLS.—W. P. Williams (Pfeilring-Werke, A.-G.). March 16, 1936. 472,294.

FOILS OR FILMS OF CELLULOSE.—Celluloid Corporation. Nov. 22, 1935. 472,454.

SYNTHESIS OF A THIAZOLE COMPOUND and its salts.—Research Corporation. March 18, 1935. 472,459.

PROCESS FOR WATERPROOFING TEXTILE MATERIALS.—W. W. Groves (I. G. Farbenindustrie.) March 27, 1936. 472,613.

CONVERSION OF HYDROCARBON OILS.—Universal Oil Products Co. Feb. 18, 1935. 472,304.

CONVERSION OF HYDROCARBON OILS.—Universal Oil Products Co. Aug. 7, 1935. 472,594.

PROCESSES FOR REFINING METALS AND ALLOYS.—W. W. Triggs (Buffalo Electric Furnace Corporation). Dec. 13, 1935. 472,038.

MANUFACTURE AND PRODUCTION OF WATER-SOLUBLE CONDENSATION PRODUCTS.—G. W. Johnson (I. G. Farbenindustrie.) Feb. 8, 1936. 471,968.

MANUFACTURE OF MIXED ESTERS OF CELLULOSE.—Distillers Co., Ltd., H. A. Auden, and H. P. Staudinger. Feb. 11, 1936. 471,894.

APPARATUS FOR THE PRODUCTION OF FOILS AND PLATES particularly from highly elastic polymerisation products.—A. Kampfer. Feb. 13, 1936. 472,114.

DEVELOPMENT OF LIGHT-SENSITIVE MATERIAL.—J. Bachmair, and L. Kollmann. Feb. 14, 1936. 471, 972.

TREATMENT OF CHROME-TANNED LEATHER.—A. H. Stevens (Hall Laboratories, Inc.). March 9, 1936. 472,164.

PROCESS FOR DYEING WITH AZO DYESTUFFS.—A. Carpmael (I. G. Farbenindustrie.) March 9, 1936. 472,043.

PROCESS AND APPARATUS FOR PRODUCING FOAM from aqueous dispersions of rubber.—Dunlop Rubber Co., Ltd., E. A. Murphy, E. W. Madge, S. D. Taylor, and D. W. Pounder. March 11, 1936. 471,899.

SAFETY GLASS.—D. Meyer. March 25, 1935. 471,904.

MANUFACTURE OF FUZEHEADS FOR ELECTRICAL FIRING.—L. Rubenstein, W. Taylor, and Imperial Chemical Industries, Ltd. March 11, 1936. 471,907.

PROCESS FOR THE MANUFACTURE OF TRANSANDROSTERONE and its derivatives.—Schering-Kahlbaum, A.-G. March 11, 1935. 471,908.

COMPOSITION OF WOOD and natural or synthetic rubber or like material.—G. W. Beldam. March 12, 1936. 472,118.

COLOUR PHOTOGRAPHY.—W. W. Groves (I. G. Farbenindustrie.) March 12, 1936. 472,224.

ELECTROLYSIS OF SODIUM SULPHATE.—I. G. Farbenindustrie. June 27, 1935. 471,912.

METHODS AND APPARATUS FOR HOT ROLLING METAL.—G. A. V. Russell, and Imperial Chemical Industries, Ltd. March 13, 1936. 471,928.

Weekly Prices of British Chemical Products

CONDITIONS throughout the chemical markets are more or less the same as reported last week. The quotation for red lead shows a further reduction, but otherwise there are no important alterations to record for general chemicals, rubber chemicals, coal tar products or distillation products. Prices on the whole are steady to firm. Most of the consuming industries have already covered their requirements for some time ahead, but deliveries are being taken up with regularity, and in quantities that are fairly substantial. A little more interest is displayed in solvents, but the volume of new business being put through is of small dimensions. In the coal tar section trade is definitely quiet with buyers reluctant to enter into fresh commitments. Values, however, are reported steady with a tendency to go higher and the market outlook is regarded as satisfactory.

MANCHESTER.—Although there has been no marked improvement in the volume of new business passing on the Manchester chemical market during the past week, there is a continued steady flow of specifications for contract deliveries of the leading products. Both solid and liquid caustic soda and the other principal alkalis are being called for in fair quantities, and a steady movement into consumption is also reported in the case of carbonate and caustic potash. A moderately active demand is reported here for the heavy acids. Apart from the metal compounds, which remain easy in tendency in consequence of the fall in the metals, price conditions are generally steady. In the by-products section sales this week have been moderate.

GLASGOW.—There has been some improvement in the demand for chemicals for home trade during the week, though export business still remains very limited. Prices generally continue steady at about the figures quoted last week.

General Chemicals

ACETONE.—£45 to £47 per ton.

ACETIC ACID.—Tech., 80%, £28 5s. per ton; pure 80%, £30 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech. glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 per ton d/d Lancs.; GLASGOW: £7 to £8 ex store.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders. SCOTLAND: 10½d. to 1s. 0½d., containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb., d/d.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE.—Grey galvanising, £17 10s. per ton, ex wharf.

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)

AMMONIUM DICHROMATE.—8d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £11 per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. SCOTLAND: White powdered, £17 ex store. MANCHESTER: White powdered Cornish £17 10s., ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £11 10s. per ton.

BLEACHING POWDER.—Spot, 35/37%, £8 15s. per ton in casks, special terms for contracts. SCOTLAND: £9 per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16, crystal, £17; powdered, £17 10s. per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHROMETAN.—Crystals, 2½d. per lb.; liquor, £19 10s. per ton d/d. station in drums. GLASGOW: 70/75% solid, £5 15s. per ton net ex store.

CHROMIC ACID.—9¼d. per lb., less 2½%; d/d U.K.

CITRIC ACID.—1s. 0¼d. per lb. MANCHESTER: 1s. SCOTLAND: B.P. crystals, 1s. per lb., less 5%, ex store.

COPPER SULPHATE.—£21 7s. 6d. per ton, less 2% in casks. MANCHESTER: £21 10s. per ton f.o.b. SCOTLAND: £22 10s. per ton, less 5%, Liverpool, in casks.

CREAM OF TARTAR.—100%, 92s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£22 10s. per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled, 1.260 s.g., in tins, £5 7s. 6d. to £6 7s. 6d. per cwt. according to quantity; in drums, £5 to £5 13s. 6d.

HYDROCHLORIC ACID.—Spot, 5s. to 7s. 6d. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 6s. 4d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots) Dark, 50% by volume, £23 10s.; by weight, £27 10s.; Pale, 50% by volume, £27; by weight, £32 per ton. LANCASHIRE: Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One-ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. GLASGOW: White crystals, £35 10s.; brown, £1 per ton less. MANCHESTER: White, £36; brown, £35.

LEAD NITRATE.—£39 per ton.

LEAD, RED.—£34 15s. per ton, less 2½% carriage paid. SCOTLAND: £34 per ton, less 2½%, carriage paid for 2-ton lots.

LITHARGE.—SCOTLAND: Ground, £34 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—SCOTLAND: Ground calcined, £9 per ton, ex store.

MAGNESIUM CHLORIDE.—SCOTLAND: £7 10s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY.—Ammoniated B.P. (white precip.), lump, 5s. 11d per lb.; powder B.P., 6s. 1d.; bichloride B.P. (corros. sub.) 5s. 2d.; powder B.P. 4s. 10d.; chloride B.P. (calomel), 5s. 11d.; red oxide cryst. (red precip.), 7s.; levig. 6s. 6d.; yellow oxide B.P. 6s. 4d.; persulphate white B.P.C., 6s. 1d.; sulphide black (hyd. sulph. cum sulph. 50%), 6s. For quantities under 112 lb., 1d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NITRIC ACID.—80° Tw. spot, £16 10s. per ton makers' works.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. GLASGOW: £2 9s. per cwt. in casks. MANCHESTER: £49 to £54 per ton ex store

PARAFFIN WAX.—SCOTLAND: 3¾d. per lb.

POTASH CAUSTIC.—Solid, £35 5s. to £36 15s. per ton for 2-ton lots ex store; broken, £42 per ton. MANCHESTER: £39.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. GLASGOW: 4¼d. per lb. MANCHESTER: £38 per ton.

POTASSIUM DICHROMATE.—SCOTLAND: 5d. per lb., net, carriage paid.

POTASSIUM IODIDE.—B.P. 5s. 6d per lb. in 7 lb. lots.

POTASSIUM NITRATE.—£27 per ton. GLASGOW: Refined granulated, £29 per ton c.i.f. U.K. ports. Spot, £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 9¾d. per lb. SCOTLAND: B.P. Crystals, 9¾d. MANCHESTER: B.P. 10¾d. to 1s.

POTASSIUM PRUSSIATE.—6¼d. per lb. SCOTLAND: 7d. net, in casks, ex store. MANCHESTER: Yellow, 6¼d.

SALAMMONIAC.—Dog-tooth crystals, £36 per ton, fine white crystals, £16 10s. per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

SALT CAKE.—Unground, spot, £3 to £3 10s. per ton.

SODA ASH.—58% spot, £5 12s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid, 76/77° spot, £12 10s. per ton d/d station. SCOTLAND: Powdered 98/99%, £18 10s. in drums, £19 5s. in casks, Solid 76/77° £15 12s. 6d. in drums; 70/73%, £15 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts, 10s. per ton less.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£18 per ton carriage paid North. GLASGOW: £18 per ton net ex store.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags. MANCHESTER: £10 10s.

SODIUM BISULPHITE POWDER.—60/62%, £20 per ton d/d 1 cwt. iron drums for home trade.

SODIUM CARBONATE MONOHYDRATE.—£15 5s. per ton d/d in minimum ton lots in 2 cwt. free bags.

SODIUM CHLORATE.—£26 10s. to £30 per ton. GLASGOW: £1 10s. per cwt., minimum 3 cwt. lots.

SODIUM CHROMATE.—4d. per lb. d/d U.K.

SODIUM DICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount 5%. MANCHESTER: 4d. per lb. GLASGOW: 4d., net, carriage paid.

SODIUM HYPOSULPHITE.—Pea crystals, £14 10s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.

SODIUM METASILICATE.—£14 per ton, d/d U.K. in cwt. bags.

SODIUM NITRATE.—Refined, £8 per ton for 6-ton lots d/d.

SODIUM NITRITE.—£18 5s. per ton for ton lots.

SODIUM PERBORATE.—10%, 9½d. per lb. d/d in 1-cwt. drums.

SODIUM PHOSPHATE.—£10 10s. to £11 per ton delivered (Di-basic).

SODIUM PRUSSIATE.—d. per lb. for ton lots. GLASGOW: 5d. to 5¾d. ex store. MANCHESTER: 4d. to 4¾d.
SODIUM SILICATE.—£9 10s. per ton.
SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 12s. 6d.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 5s. per ton d/d in drums; crystals 30/32%, £8 15s. per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
SODIUM SULPHITE.—Pea crystals, spot, £13 10s. per ton d/d sta- of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb.
SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.—1s. 1¼d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1d. per lb.
ZINC SULPHATE.—Crystals, £9 per ton, f.o.r., in bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 1d. per lb., according to quality. Crimson, 1s. 5½d. to 1s. 7d. per lb., according to quality
ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £6 10s. per ton, according to quality.
CADMIUM SULPHIDE.—7s. 8d. to 7s. 11d. per lb.
CARBON BLACK.—4¾d. per lb., ex store.
CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 2d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4¾d. to 5½d. per lb.; dark 4d. to 4½d. per lb.
LAMP BLACK.—£28 to £30 per ton del., according to quantity. Vegetable black, £35 per ton upwards.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE.—30%, £16 10s. to £17 5s. per ton.
SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.
SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.
VERMILLION.—Pale, or deep, 5s. 3d. per lb., 1-cwt. lots.
ZINC SULPHIDE.—£58 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6 = nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1938: October, 1937, £7 6s. 6d. per ton; November, £7 8s.; December, £7 9s. 6d.; January, 1938, £7 11s.; February, £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1938: October, 1937, £7 8s. 9d. per ton; November, £7 10s.; December, £7 11s. 3d.; January, 1938, £7 12s. 6d.; February, £7 13s. 9d.; March, £7 15s.; April/June, £7 16s. 3d.
NITRO CHALK.—£7 10s. 6d. per ton for delivery up to June 30, 1938.
SODIUM NITRATE.—£8 per ton for delivery up to June 30, 1938.
CONCENTRATED COMPLETE FERTILISERS.—£10 12s. to £11 1s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 5s. to £13 5s. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9½d. to 10d. per gal.; standard motor, 1s. 3d. to 1s. 3½d.; 90%, 1s. 4d. to 1s. 4½d.; pure, 1s. 8d. to 1s. 8½d. GLASGOW: Crude, 10d. to 10½d. per gal.; motor, 1s. 4d. to 1s. 4½d.
CARBOLIC ACID.—Crystals, 7¾d. to 8½d. per lb., small quantities would be dearer; Crude, 60's, 4s. to 4s. 3d., dehydrated, 4s. 6d. to 4s. 9d. per gal. MANCHESTER: Crystals, 10½d. per lb. f.o.b. in drums; crude, 4s. 4d. per gal. GLASGOW: Crude, 60's, 4s. 3d. to 4s. 6d. per gal.; distilled, 60's.
CREOSOTE.—Home trade, 6¼d. to 6¾d. per gal., f.o.r. makers' works; exports, 6¾d. to 6¾d. per gal., according to grade. MANCHESTER: 5½d. to 6½d. GLASGOW: B.S.I. Specification, 6d. to 6½d. per gal.; washed oil, 5d. to 5½d.; lower sp. gr. oils, 5¾d. to 6½d.
CRESYLIC ACID.—97/99%, 5s. to 5s. 2d.; 99/100%, 5s. to 5s. 9d. per gal., according to specification; Pale, 99/100%, 5s. 3d. to 5s. 5d. per gal.; Dark, 95%, 4s. 5d. to 4s. 7d. per gal. GLASGOW: Pale, 99/100%, 5s. to 5s. 6d. per gal.; pale 97/99%, 4s. 6d. to 4s. 10d., dark, 97/99%, 4s. 3d. to 4s. 6d.; high boiling acids, 2s. to 2s. 6d. American specification, 4s. 3d. to 4s. 6d. MANCHESTER: Pale, 99/100%, 4s. 10d.
NAPHTHA.—Solvent, 90/160, 1s. 6½d. to 1s. 7½d. per gal.; solvent, 95/160%, 1s. 8d. to 1s. 9d., naked at works; heavy 90/190%, 1s. 1½d. to 1s. 3d. per gal., naked at works, according to quantity. GLASGOW: Crude, 6½d. to 7½d. per gal.; 90%, 160, 1s. 5d. to 1s. 6d., 90%, 190, 1s. 1d. to 1s. 3d.
NAPHTHALENE.—Crude, whizzed or hot pressed, £9 to £10 per ton; purified crystals, £18 per ton in 2-cwt. bags. LONDON: Fire lighter quality, £5 10s. to £7 per ton. GLASGOW: Fire lighter, crude, £6 to £7 per ton (bags free). MANCHESTER: Refined, £20 per ton f.o.b.
PITCH.—Medium, soft, 38s. per ton, f.o.b. MANCHESTER: 37s. f.o.b., East Coast. GLASGOW: f.o.b. Glasgow, 35s. to 37s. per ton; in bulk for home trade, 35s.
PYRIDINE.—99/140%, 12s. to 14s. per gal.; 90/160%, 11s. to 11s. 6d. per gal.; 90/180%, 2s. 9d. to 3s. 6d. per gal., f.o.b. GLASGOW: 90% 140, 10s. to 12s. per gal.; 90% 160, 9s. to 10s.; 90% 180, 2s. 6d. to 3s. MANCHESTER: 11s. to 12s. per gal.
TOLUOL.—90%, 1s. 11d. per gal.; pure, 2s. 5d. GLASGOW: 90%, 120, 1s. 10d. to 2s. per gal.
XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. GLASGOW: Commercial, 2s. to 2s. 1d. per gal.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £8 to £8 10s. per ton; grey, £10 10s. to £11 10s. Liquor, brown, 30° Tw., 6d. to 8d. per gal. MANCHESTER: Brown, £9 10s.; grey, £11 10s.
METHYL ACETONE.—40-50%, £42 to £45 per ton.
WOOD CREOSOTE.—Unrefined 6d. to 9d. per gal., according to boiling range.
WOOD, NAPHTHA, MISCIBLE.—2s. 8d. to 3s. 3d. per gal.; solvent, 3s. 6d. to 3s. 9d. per gal.
WOOD TAR.—£3 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZIDINE, HCl.—2s. 5d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 9¼d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d. to 7½d. per lb. in 1-ton lots.
p-CRESOL, 34-5° C.—1s. 7d. to 1s. 8d. per lb. in ton lots.
DICHLORANILINE.—1s. 11½d. to 2s. 3d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£72 per ton.
DINITROTOLUENE.—48/50° C., 8¼d. per lb.; 66/68° C., 10d.
DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works
GAMMA ACID.—Spot, 4s. per lb. 100% d/d buyer's works.
H ACID.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.
NAPHTHIONIC ACID.—1s. 8d. per lb.
α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.
β-NAPHTHOL.—9½d. to 9¾d. per lb.; flake, 9½d. to 9¾d.
α-NAPHTHYLAMINE.—Lumps, 1s. per lb.; ground, 1s. 0½d. in casks.
β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb., d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. per lb. 100%.
o-NITRANILINE.—3s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 7d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. to 2s. 1d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra. 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb., 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10-cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Latest Oil Prices

LONDON, Oct. 6.—LINSEED OIL was barely steady. Spot, £32 5s. per ton (small quantities); Oct. and Nov.-Dec., £29 15s.; Jan. to Dec. (1938), £29 10s., naked. SOYA BEAN OIL was steady. Oriental, spot, ex tank Rotterdam, £23 15s. per ton. RAPE OIL was quiet. Crude extracted, £37 per ton; technical refined, £38, naked, ex wharf. COTTON OIL was firmer. Egyptian crude, £22 per ton; refined common edible, £25 10s.; deodorised, £27 10s. naked, ex mill (small lots £1 10s. extra). TURPENTINE was steady. American, spot, 32s. 6d. per cwt.; Nov.-Dec. delivery, 33s.; Jan.-April, 33s. 9d.
HULL.—LINSEED OIL.—Spot, quoted £30 12s. 6d. per ton; Oct., £30 2s. 6d.; Nov.-Dec., £29 17s. 6d.; Jan.-April, £29 12s. 6d.; May-Aug., £29 10s. COTTON OIL.—Egyptian, crude, spot, £22 per ton; edible, refined, spot, £25; technical, spot, £25; deodorised, £27, naked. PALM KERNEL OIL.—Crude, f.m.q., spot, £24 per ton, naked. GROUNDNUT OIL.—Extracted, spot, £30 per ton; deodorised, £33. RAPE OIL.—Extracted, spot, £36 per ton; refined, £37. SOYA OIL.—Extracted, spot, £29 10s. per ton; deodorised, £32 10s. COD OIL.—F.o.r. or f.a.s., 27s. 6d. per cwt. in barrels. CASTOR OIL.—Pharmaceutical, 46s. 6d. per cwt.; first, 41s. 6d.; second, 39s. 6d. TURPENTINE.—American, spot, 35s. 9d. per cwt.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Satisfactions

CONSOLIDATED ANTHRACITE COLLIERIES, LTD., Pontypool. (M.S., 9/10/37.) Satisfactions September 28, of debentures registered August 11, 1902, August 26, 1903, and February 26, 1906, and of charge registered September 22, 1911.

MEDWAY FINE CHEMICALS (1933), LTD., Gillingham (Kent). (M.S., 9/10/37.) Satisfaction September 28, of debenture registered May 14, 1934.

Company News

British Xylonite Co., Ltd., has announced an interim of 2½ per cent., less tax (same), on the ordinary shares.

Burt, Boulton and Haywood, Ltd., tar distillers, etc., announces a final dividend of 2½ per cent., plus bonus of 2 per cent., both less tax, on the ordinary shares, payable October 16, making 7 per cent. (5 per cent.) for year ended June 30 last. Meeting, October 14, at 12 noon.

Metallgesellscaft A.G. announces that 6½ per cent. fifteen-year sterling bonds may now be presented to Helbert, Wagg and Co., Ltd., for exchange for vouchers for konversionskasse 4 per cent. sterling bonds, fourth series, on the terms of the statement of the konversionskasse dated July 26.

The Electrolytic Zinc Co. of Australia, Ltd., announces a sharp increase in net profits of £213,750 to £536,613 for the year to June 30 last

Erinoid, Ltd., manufacturers of non-inflammable non-conducting material, announces a final dividend on the ordinary shares of 5 per cent., less tax, making 8 per cent. (10 per cent) for the year to July 31.

Longmorn-Glenlivet Distilleries, in their report for the year ended July 31, show a profit of £9,640 (£8,360); add £19,045 brought in, making £28,685. Dividend of 15 per cent. (same) and bonus of 15 per cent. (10 per cent.) on ordinary shares, both tax free; to tax reserve £2,800 (£2,000); forward £20,635.

Burmah Oil Co., Ltd., is maintaining its interim ordinary dividend at 5 per cent. (1s. per £1 unit). Payment will be made less tax, at 3s. 4¾d. in the £1 on November 5 to ordinary stockholders registered on September 29. The 5 per cent. interim a year ago was followed by a final of 17½ per cent. and a cash bonus of 5 per cent., making 27½ per cent. in all, which compared with 20 per cent. for 1935 and 15 per cent. for 1934. The half-year's dividend to June 30, 1937, on the 6 per cent. first and second preference stock, less tax at 3s. 7¾d. in the £1, will be paid on October 30.

Minerals Separation, Ltd., is doubling its interim dividend at 20 per cent. (equal to 4s. per £1 share), less tax. Payment will be made on October 28 to members registered on October 8. The interim of 10 per cent. was followed by a final of 15 per cent., less tax. The company owns patents for flotation processes and apparatus for treating gold, silver-lead, zinc and copper, etc.

United Steel Companies, Ltd., report a further substantial rise in trading profits from £1,545,278 to £2,075,322 in the year ended June 30 last. Both figures include gross dividends from subsidiary companies before providing for depreciation, etc., and gross income from associated companies. The central reserve for depreciation and obsolescence receives £100,000 more at £500,000, and the amount deducted for tax, including an allocation of £443,500 to tax reserve (including N.D.C.), is £204,728 higher at £560,850, after transferring £247,674 from tax reserve. This leaves net earnings at £736,350 compared with £529,627.

Dunlop Rubber Co., Ltd., announces that, so far as ascertained, the trading results to date compare favourably with those of the preceding year. The warrants for the dividend on the £1,000,000 6½ per cent. cumulative "A" preference shares, the £1,000,000 7 per cent. cumulative "B" preference shares and £2,400,000 10 per cent. cumulative "C" preference shares will be posted on October 30 as usual. No interim dividend has been paid on the ordinary capital since 1930. The final dividend last year of 8 per cent., less tax, was accompanied by a 1 per cent., less tax, cash bonus. There is £8,333,023 of ordinary stock in issue.

Bryant and May, Ltd., match manufacturers, which is controlled by British Match Corporation, announces an interim dividend of 10 per cent., tax free, on the ordinary shares. This is the same as for the previous year. An interim of 5 per cent., tax free, on the partnership shares is also announced, both dividends being payable on October 30.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

Egypt.—The Commercial Councillor to H.M. Embassy in Egypt reports that the Egyptian Ministry of Agriculture is calling for tenders for the supply of chemicals and laboratory equipment and apparatus for the Mycological Section, including gypsum sulphur, copper sulphate, flasks, specimen jars, crystallising basins, beakers and covers, filter papers, rubber corks, glass tubing and stirrers gummed labels, rubber bands, bottles, etc. Tenders will be received by the Section of Stores, Purchases and Workshops at Dokki, Egypt, up to November 8, 1937. Copies of the schedule of requirements are available upon application to the Department of Overseas Trade, 35 Old Queen Street, London, S.W.1. (T.Y. 20157/37.)

Chemical and Allied Stocks and Shares

THE industrial and other sections of the Stock Exchange have failed to maintain the somewhat more active conditions in evidence last week. Sentiment was influenced by the very belief certain trend of New York markets, and by the growing belief that the stock and share markets are likely to continue to attract very little attention so long as there is no material improvement in international affairs.

Distillers were a steady feature and are 108s. 3d. at the time of writing, or within 3d. of the price ruling a week ago. Imperial Chemical have lost 9d. to 37s. 3d., but this was attributed to general market conditions as there are continued hopes that having regard to the larger interim dividend a small increase over last year's 8 per cent. dividend may be in prospect. Borax Consolidated remained at 30s. in advance of the interim dividend decision. United Molasses were active, on encouraging dividend estimates, but as compared with a week ago have moved down from 29s. 9d. to 28s. 10½d. Some market men are suggesting that rather than make a large increase in dividend it might perhaps be decided to provide a bonus in the form of a writing up of the nominal value of the ordinary shares.

Triplex Safety Glass have continued to fluctuate sharply and have reacted from 60s. to 53s. 9d. at the time of writing. There was an easier tendency in other glass shares, including Lancegaye Safety Glass and United Glass Bottle, the latter having lost 9d. to 52s. 3d. Canning Town Glass 5s. shares transferred actively around 6s. Results of Splintex Safety Glass are due in the next few weeks; they may contain proposals for reorganising the capital, reference to which was made at the last meeting.

Murex were moderately lower at 91s. 3d., despite the excellent impression created by the past year's results, and British Oxygen have declined from 98s. 9d. to 96s. 3d., although it continues to be expected in the market that the interim dividend of the latter company will be maintained. Dunlop Rubber at 33s. 10½d. were slightly better on the directors' statement as to the company's progress. There was a firmer tendency in Unilever, which were around 40s., there being hopes that a larger interim dividend may be announced next month. Imperial Smelting continued to fluctuate rather sharply and at 14s. 9d. have lost 1s. on the week. The market remains very uncertain as to whether the company will resume dividends this year. Amalgamated Metal Corporation shares failed to keep best prices, it being felt that owing to the fluctuating conditions in the metal markets it is difficult to form an opinion as to the progress of metal dealing concerns.

International Combustion were a steady feature at 120s. Last year this company paid a dividend of 30 per cent. on which basis the shares offer a yield of 5 per cent. at their current price. British Glues remained at 7s. 6d. Last year the latter company dealt conservatively with its profits, but the dividend was raised from 7½ per cent. to 10 per cent. Sangers were steady at 24s. 6d. there being anticipations that the dividend for the current year is likely to be maintained at 25 per cent. on the enlarged capital. Timothy Whites and Taylors were unchanged at 33s. 3d. aided by hopes that a larger dividend may be forthcoming for the past financial year, while Boots Pure Drug at 50s. 6d. were also well maintained. United Premier Oil and Cake retained the higher price which followed the announcement of the larger interim dividend. Fison, Packard and Prentice were around 37s. 6d., pending publication of the results.

United Steel ordinary units were one of the firmer features among iron, steel and allied shares, and at 30s. 7½d., are moderately higher on the week. The advance in profits and the very full information regarding the company and its activities, provided by the report and accounts, created an excellent impression in the market. Associated Portland Cement reacted sharply to 84s. and British Plaster Board were lowered from 30s. to 26s. 6d. General Refractories were unchanged at 25s. 9d.